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ORGANIC STRICTURE OF THE URETHRA.¹

Methods of Treatment Recommended, with Indications for their Employment.

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In this paper it is proposed to recount only such methods of treating stricture of the urethra as are believed to be most reliable and that at the same time offer the quickest and most permanent results. There is hardly any malady about whose treatment surgeons differ more widely than that of urethral stricture. Many authorities recommend some one of the various methods of dilatation, and condemn all other forms of treatment; others advocate the cutting-operations; and, again some make use of both dilatation and cutting.

At the very outset the patient must be carefully examined, to determine the position, caliber, resiliency, existing irritability of the stricture, and whether there be one or more. The condition of the bladder and kidneys must be ascertained, and a microscopic and chemic examination of the urine must be made to determine whether casts, pus, mucus or blood be present, and whether the urine contain albumin or sugar; also the quantity of urea present, and the quantity of urine passed during twenty-four hours.

The various methods employed for the eradication of stricture are gradual dilatation, continuous dilatation, modified rapid dilatation (which is a modification of the method known as divulsion), internal urethrotomy, dilating internal urethrotomy, dilating internal and external perineal urethrotomy, external perineal urethrotomy with a guide, and external urethrotomy without a guide, more generally known as perineal section.

Gradual dilatation is the treatment usually pursued for the relief of stricture, and is by far the safest method that can be used, as death has never been known to follow its employment. In soft, recent strictures, the number of permanent cures resulting from gradual dilatation compares favorably with that of those treated by internal urethrotomy, without incurring the risk attendant upon the latter operation.

To perform gradual dilatation the character, position, and caliber of the stricture should be determined by means of a bougie à boule. The operator should begin, when the caliber of the stricture is large, with a conical steel bougie one or two sizes below the diameter of the coarctation, as there is usually associated with this condition more or less hyperesthesia of the urethra, and the onward progress of an instrument large enough to fill or distend the stricture gives rise to great pain, which causes more or less spasm, interfering with the advance of the bougie. The structures in the neighborhood of the obstruction are likely to be congested, chronically inflamed, and softened; if there is much distention the mucous membrane is easily lacerated, and more or less blood flows, and there is pain after micturition. In rare cases urine is absorbed into the system in consequence of abrasion or laceration, giving rise to urinary fever; but by beginning with a bougie smaller in diameter than the caliber of the stricture this complication is frequently avoided. The confidence of the patient is gained by the instrument producing but little pain, and after the bougie has been passed a few times much more rapid progress can be made than when force is used.

The rule that I have adopted is to increase the size of the instrument as the pain of insertion diminishes and as the amount of blood following the introduction is lessened in amount, or ceases. The instrument should not be introduced more frequently than every third day, and should be immediately withdrawn.

Both the urethra and the instruments should be put in a thoroughly aseptic condition. The urethral instruments should be washed in a solution of soda, subjected to heat, and dried on an aseptic towel before being used. Over the operating-table should be arranged a receptacle to contain water, to which have been added ten grains of boric acid to each ounce, and, by means of a rubber catheter, which has been sterilized by being immersed in a 1:1000 mercuric-chlorid solution, the urethra is irrigated, and a clean bougie that has been lubricated with an ointment composed of a dram of oil of eucalyptus, or boric acid, to the ounce of vaselin is inserted.

Palmer has shown the value of boric acid in sterilizing the urine, if administered internally when the patient is first placed under treatment. It should be given for two weeks, in doses of ten grains three times daily. Urinary fever is most

¹ Read before the Medical Society of the State of Pennsylvania.

likely to occur at the beginning of the treatment, when the mucous membrane of the canal is in a condition of subacute inflammation, and somewhat softened. It is by employing boric acid that this condition is as a rule avoided.

Examination of the urethra by means of the endoscope will show how rapidly the inflammatory symptoms disappear in the neighborhood of the stricture when partial dilatation has been accomplished. This change possibly accounts for the rapid amelioration of the local symptoms of which patients so frequently complain; it takes place even after the instrument has been passed but a few times and the caliber of the urethra has not yet been restored.

The length of time that the treatment should be continued will vary with the condition of the obstruction to be overcome. If the stricture is extensive, about three months will be required to restore the urethra to its normal size. During this time the patient is to be instructed in the use of the instrument, which he should be directed to pass twice a week for a period of two months longer, after which he must use it once a week for a similar period, then once in two weeks, and finally once a month. The treatment may then be stopped, the individual being directed to return to the use of the instrument whenever there is an indication that recurrence is taking place.

By the method here outlined, of faithfully employing the instrument when necessary, the patient can always keep the urethra clear of obstruction, and need suffer from no further urinary difficulty. In cases of stricture of very small caliber a much longer time than the period here indicated will be required to bring about permanently good results.

Gradual dilatation may be employed for years, with every advantage to the patient, no symptom of obstruction making its appearance, and no indication of trouble from the prolonged use of the bougie.

When this method is pursued with recent strictures they frequently altogether disappear, and give no further trouble. Under such circumstances the further use of the instrument may be dispensed with.

Gradual dilatation is indicated in all cases of recent dilatable stricture in any portion of the urethra, and in all cases in which the stricture is not irritable, resilient or nodular. Firm, well-organized bands, situated within from three-and-a-half to four inches of the meatus require other measures for their relief.

In cases of diabetes and advanced disease of the kidneys gradual dilatation is far safer than any other method of treatment. This is likewise the case in those suffering from debility, disease of the heart, in

persons who are broken down in health, or in the very old, especially if there co-exist chronic urinary fever.

In many instances I would have advised in favor of one of the cutting operations instead of dilatation, had not ample experience taught me that in case of a well-organized stricture urethrotomy is followed by recontraction about as frequently as dilatation, the patient at the same time running the great hazard that always follows a cutting-operation, with very little if any better chance of permanent benefit in his favor.

It cannot be denied that every urethrotomy is attended with more or less risk to the patient, whilst dilatation is perfectly safe; moreover, the farther the division of the stricture is made from the meatus the greater will be danger from the operation.

I have seen, in the practice of one of the most distinguished surgeons of this city, death follow from simple division of the meatus. This unfortunate result was due to shock, and occurred four hours after the operation, in spite of every effort to avert the catastrophe. Even in the hands of the most experienced operators the death-rate from internal urethrotomy is two in every hundred cases.

Taking the dangers of the cutting-methods into consideration, and also the fact that they are rarely followed by permanent results, it would seem to be obligatory on the part of the surgeon to give the uninformed the option of the safest course. If the cure from the cutting-operations were radical, and if the strictures did not recontract in a large percentage of cases, it would doubtless be the duty of the practitioner to allow the patient to run the risk of urethrotomy; but when we are assured that the result is by no means certain by any method now employed, we should not hesitate to recommend a course that, whilst it has its disadvantages, yet relieves the symptoms due to obstruction, and is absolutely safe.

Continuous dilatation. In resorting to continuous dilatation, the surgeon should begin with a very small instrument, a filiform bougie being usually employed. This must be allowed to remain *in situ* for three days, when, as a result of continuous pressure, the stricture relaxes sufficiently to allow of the introduction of a larger instrument. As a rule, the tunnelled catheter is the instrument to be used; this is passed over the whalebone and through the obstruction into the bladder. After this the surgeon is free to deal with the stricture in any manner that he may prefer.

There are two conditions under which this method of treatment is applicable: First, when there exists a stricture of small caliber, usually situated in the membranous portion of the canal, and generally accompanied by retention of urine; secondly, when,

although the stricture is tight, the patient is enabled to pass urine with sufficient ease to allow him to be prepared for a radical operation.

In the first instance, when a filiform has been inserted, a Gouley tunnelled catheter should, if possible, be threaded over the whalebone, passed through the obstruction, and the urine withdrawn. Should the effort to pass the catheter be unsuccessful the filiform bougie should be fastened so that it cannot come out of the urethra; if the symptoms are urgent the bladder must be aspirated. If the viscus is not overdilated the patient should be given half a grain of morphia and immersed in a hot bath, when he will have but little further trouble in passing his urine. The stricture can then be treated as the surgeon may deem most expedient.

Under the second condition continuous dilatation is employed simply to enable the operator to overcome the coarctation by the use of either gradual or modified rapid dilatation, or to enable him to enlarge the stricture sufficiently to pass a Syme's staff and thus facilitate the performance of external perineal urethrotomy, should this operation be indicated.

The failure of many practitioners to use filiform bougies successfully depends on various causes: these instruments, as sold in the shops, are more often than otherwise worthless; they are too stiff, not well rounded, and do not terminate in a proper neck, and are generally too large to be threaded over the smaller-sized catheters. The surgeon should make his own filiform bougies; a dozen properly constructed will, with ordinary care, last through several years of active practice. An important rule to follow is to employ the filiform before another bougie, a catheter, or any other instrument has been introduced into the urethra. If an instrument has been previously used it is of very little avail to attempt to pass a filiform, as failure will generally result. The operator must not be sparing of his time in these cases, as infinite patience is a necessary element of success.

It is well first to distend the canal by gently injecting a syringe of carbolyzed oil before inserting the filiform, which has been rendered aseptic, and which is to be introduced into the meatus and passed slowly down to the obstruction, while at the same time the patient's face is carefully watched for the slightest expression of pain, which indicates that the onward passage of the filiform must cease. The slightest impediment to the passage of the bougie should warn the operator that he has proceeded far enough with the instrument, when a second should be introduced in the same manner, and the process thus repeated until six or eight whalebones have been inserted, when the operator very gently tries each in turn to see if he can find the opening in the obstruction; beginning on the left and passing to

the right side of the patient, the surgeon naturally tending to work toward himself.

If the stricture be eccentric the opening will probably be found by this manipulation, when the instrument will glide through the contraction with little or no pain; and without force being required it will pass into the bladder and will be freely movable in the urethra.

These instruments are frequently made with a spiral twist at the end, on the supposition that the physician can more readily pass such a one should the stricture be eccentric. I have never had any use for a filiform of this description, as I have in every instance had perfect success with the straight instrument.

In order to successfully insert a tunnelled catheter over the filiform and through the stricture the catheter should be gently passed down to the obstruction, then transferred from the right to the left hand, and whilst the right hand puts the penis on the stretch the filiform is to be withdrawn about a quarter of an inch, and then both the filiform and the tunnelled catheter are to be carried together through the coarctation. This procedure prevents the catheter from cutting the filiform in two and assists in guiding the instrument through the obstruction.

This method of treatment is of great value as an adjunct to the employment of more radical measures. It is of service in relieving retention of urine due to strictures of small caliber, in preparing the canal for gradual or modified rapid dilatation, and in permitting the passage of a staff for external perineal urethrotomy.

If a stricture exists in the neighborhood of the bulbous or membranous portion of the canal, and is neither irritable, resilient, nor nodular, the employment of continuous dilatation should be followed by the gradual method, and if this is not practicable modified rapid dilatation is strongly recommended.

By *modified rapid dilatation* is meant a modification of the procedure generally known as *divulsion*, by which is understood the passing of a dilator so as to rupture the constricting bands. Divulsion of a stricture by Holt's instrument is generally condemned as dangerous to life, as has been abundantly proved by a large mass of clinical testimony; nor does it offer better results than safer methods.

The operation to which I have given the name of modified rapid dilatation is not in favor with many genito-urinary surgeons. Up to this time I have operated by this method on ninety-six strictures of small caliber situated in the membranous portion of the urethra, and I have had good results in all. In one instance only did the temperature rise above 100° F.; in this case the fever was doubtless owing to the interference of the patient, who removed the

catheter on the second day, in the face of explicit directions to the contrary.

Prof. John H. Brinton, who has been an advocate of this form of operation for many years, and who has operated upon a large number of patients, has had similar results. Patients thus operated on are confined to the house but four days, at the end of which time they are allowed to go about, with directions to report to the surgeon twice a week, in order to have a full-sized bougie inserted, which they soon learn to use themselves. The treatment is to be continued as advised when speaking of gradual dilatation.

I have not observed that strictures thus treated show any greater tendency to re-contract than those in which either internal or external urethotomy has been performed, especially if dilatation is continued afterward.

To properly carry out this method of treatment the patient is to be put to bed, the urethra is washed out with a 4 per cent. solution of boric acid and an aseptic filiform bougie is passed and tied in place. The patient is then given ten grains of boric acid three times daily, and the urethra is to be daily irrigated with boric-acid solution. At the termination of the third day the patient is etherized and the urethra washed with a 1 : 20,000 mercuric-chlorid solution. The Thompson dilator is then passed over the filiform and through the obstruction, when, by means of the thumb-screw attached to the handle, the blades of the instrument are slowly and very gradually separated to a very slight degree, and after remaining in this position for one minute are again approximated.

This procedure of alternate separation and approximation of the blades of the instrument is repeated, taking care each time to separate the blades of the instrument to a somewhat greater extent, until the stricture is enlarged sufficiently to allow of the insertion of a Gross dilator, which requires that the caliber of the urethra should not be less than 18 F.

The Thompson instrument is then removed and the Gross instrument inserted. In the same gradual manner the caliber of the urethra is brought to the full size of the canal, which has previously been ascertained by means of a bougie à boule. The time occupied in carrying out this treatment should be from *twenty to thirty minutes*.

Strictures so treated are stretched rather than lacerated or torn; this is shown by the little or no hemorrhage that follows, and on examination with the endoscope two weeks later, the walls of the urethra will be found to be smooth and not ragged, as might naturally be expected if laceration had taken place.

After the Gross instrument is removed a full-sized

bougie is passed, to ascertain whether all obstruction has been removed; if this is found to be the case the urethra should be irrigated with a 1 : 20,000 mercuric-chlorid solution and a sterilized catheter passed and tied in place; then a small quantity of warm boric-acid solution is to be injected into the bladder. The patient is put to bed; the urethra and bladder are to be daily irrigated with a warm boric-acid solution, and on the fourth day the instrument is removed and a full-sized bougie is passed. The patient is allowed to sit up, and may resume his duties on the following day.

This method is applicable to the treatment of filiform strictures situated in the neighborhood of the bulbous and membranous portions of the urethra, and which are neither irritable, resilient, nor nodular, and which cannot be treated by gradual dilatation. It likewise offers the best chance when time is an object, as for instance, when the individual is about to undertake a journey or is about to be married. It should not be performed in the aged, nor in those suffering from disease of the kidney, urinary fistula, or abscess of the perineum. In many cases in which the stricture was resilient, the caliber very small, and a perineal section was indicated I have employed it primarily to facilitate the passage of the grooved staff, immediately afterward performing the cutting-operation.

It would surely seem that an operation that is so free from complications, attended with so little danger to life, and which at the same time produces such favorable results, with no greater tendency to relapse than is to be encountered after other methods, is entitled to a prominent place among the resources that the surgeon possesses wherewith to overcome obstructions in the bulbous and membranous portions of the urethra.

When it is observed that in performing modified gradual dilatation the stricture is dilated gradually, and that an effort is simply made to restore the contracted portion of the canal to its normal caliber, that it is not over-dilated, and that in conjunction with the operation the strictest aseptic and antiseptic precautions are employed, it will be seen that it differs very materially from the method of division, which should become obsolete.

Internal urethrotomy should be limited to well-organized strictures situated within from three-and-a-half to four inches from the meatus. If they be of such small caliber that a urethrotome cannot be passed, they should be first cut on the roof of the urethra, from before backward, by means of the Maisonneuve instrument, and the constriction should be divided on the floor of the canal by the Gross urethrotome, which, being of the shape of a bulbous bougie, locates the constricting band with great exactness. Strictures of the meatus and of the neigh-

borhood of the fossa navicularis should be divided on the floor of the urethra, especially if they give rise to reflex symptoms.

Dilating internal urethrotomy, though very thorough, is not indicated in many instances. Some of the worst obstructions with which I have met have followed it.

Its sphere of usefulness is confined to those conditions in which the stricture is well organized, of long standing, situated within three-and-a-half inches of the meatus, and is either nodular or resilient. In the latter conditions it is the only operation that offers permanent relief; but unless the patient employs the bougie in the manner recommended when treating of gradual dilatation, the coarctation will be likely to re-form.

Dilating internal urethrotomy should not be employed in a case of ordinary stricture of the penile portion of the canal, unless this be complicated in the manner already described, as the operation is likely to be followed by a curvature of the penis, which may last for a period ranging from six weeks to a year, and is, of course, a source of great mental anxiety to the individual. What is far worse, however, is that the knife of the instrument cuts so deeply that an extensive division of the muscular fibers of the urethra follows, and as a result dribbling of urine after the act of micturition takes place; as the canal is unable to expel the last drops of urine, it slowly oozes from the meatus. This condition is permanent.

If it can be avoided, dilating internal urethrotomy should not be performed on persons suffering from impotence, neurasthenia, abnormal nocturnal losses, or sexual hypochondriasis. Very naturally, the incurvation of the penis and the dribbling of the urine produce very depressing mental effects on these patients, which are difficult to overcome. When these complications exist I much prefer to rely upon internal urethrotomy by the Gross instrument. I have resorted to dilating internal urethrotomy in forty-eight cases in which the conditions indicated were present, without a single death.

Combined internal and external urethrotomy is resorted to for the relief of nodular strictures of the penile portion of the urethra and of strictures of the bulbous portion of the canal. The object in opening the membranous portion of the tube is that in cases of nodular stricture situated on the anterior portion of the urethra, and which has been divided, the parts may be put at physiologic rest, and thus the indurated tissue of which they are formed is permitted to undergo fatty degeneration, atrophy, and absorption.

I have twice performed combined internal and external urethrotomy with success; on three occasions I modified it with equally good results. The

strictures were situated about two-and-a-half inches from the meatus, and were nodular, resilient, and of very small caliber. By means of the Maisonneuve instrument they were divided on the roof of the canal, and the insertion of the Otis dilating urethrotome thus permitted; the constricting bands on the floor were now freely divided and the caliber of the urethra brought to its full size. A silver catheter was then passed, fastened in place, and allowed to remain *in situ* for two weeks; temporarily removing it every third day in order to sterilize it. The urethra and bladder were daily irrigated with boric-acid solution. The induration around the seat of the stricture disappeared, and the patients recovered without the necessity for complicating the cases by the addition of perineal punctures.

In *external perineal urethrotomy by means of a guide* the membranous urethra is opened, the surgeon being guided in reaching that portion of the canal by either a Syme's staff or a filiform bougie. It is employed in cases of non-dilatable, resilient, nodular strictures of small caliber, of obstructions of the canal associated with fistulæ and abscesses of the perineum, and in conjunction with internal urethrotomy performed upon some part of the penile portion of the urethra.

External perineal urethrotomy without a guide, generally known as *perineal section*, is performed when no guide of any kind can be passed through the obstruction. It is usually necessary in cases of stricture of traumatic origin, of obstructions associated with fistulæ and abscesses, and of false passages, with retention of urine. It may be performed either by carefully dissecting down upon the urethra until it is found, and then cutting through the stricture, or by resorting to the Cocks or the Wheelhouse method.

With the aid of a modification of the Wheelhouse staff which I have designed I have been enabled to very materially simplify the operation of Wheelhouse. The modified staff consists of two blades terminating at one end in the ordinary hook, like that of the Wheelhouse instrument. At the handle is a thumb-screw, by means of which the blades of the shaft may be separated. An indicator serves to show the extent to which the blades have been parted. This instrument is passed into the canal until it comes in contact with the stricture; it is then withdrawn for a distance of a quarter of an inch, when, by means of the thumb-screw, the blades are separated and the instrument is set; the urethra is thus fixed and made prominent. After the skin is divided in the median line of the perineum, the surgeon, by a single incision, opens the urethra one-fourth of an inch in front of the contraction; the blades of the instrument are then brought into apposition, and the staff is turned so that the hook

engages the upper angle of the incision. The remainder of the operation is completed in the manner recommended by Mr. Wheelhouse.

Electrolysis. Of ten cases in which I attempted to treat strictures by this means, all did badly. In most, either urethritis, prostatitis, cystitis, or epididymitis followed, and the treatment was necessarily abandoned. In those wherein these complications did not arise there was no improvement. In one only was there slight benefit, and this was due to the gradual dilatation of the coarctation produced by the electrode. This method of treatment is therefore not recommended.

SOME PRACTICAL POINTS ON ETHER-ANESTHESIA.¹

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It is not the purpose of this paper to discuss the mooted question as to whether chloroform or ether is the better anesthetic. Nor is it the intention to discuss the entire subject of anesthesia by ether and to review the extensive literature pertaining thereto. The object is to bring up for consideration and discussion a few practical points selected mainly from personal experience.

At the outset I wish to devote some consideration to the Trendelenburg position in so far as it bears on the danger or safety of the anesthetic. It is a resort of so much value in some cases of abdominal and pelvic surgery that it will be permanently adopted for those particular operations. It is well, therefore, to consider in what manner the phenomena of anesthesia are modified by this position. At first thought it might seem to be the ideal position. Prompt lowering of the head is one of the measures generally recommended in treating cases in which dangerous shock results from the anesthetic. But it is one thing to use the position temporarily to supply blood to the nerve-centers, and quite another thing to adopt the position throughout the operation.

The experiments of Hare on the rabbit are instructive in this connection. When the anesthetized rabbit is placed in a position simulating that of Trendelenburg, there is such marked respiratory failure that death soon follows. This is due to the pressure of the abdominal contents on the diaphragm. We do not get such effects in man, probably because his abdominal organs are relatively small, and because his thorax is not nearly so conical as that of the rabbit. Still, it is well to watch the action of the diaphragm with unusual care when the patient is in this position. My experience leads me to believe that the position

entails but slight additional dangers, provided the table be properly constructed. As usually constructed, the middle portion is so arranged that it can be raised into a double inclined plane. One plane supports the legs of the patient and the other supports the thighs and body, while the head rests on the horizontal portion of the table, thus forcing the shoulders into the angle and flexing the head on the chest.

I have seen dangerous interference with the respiration result from this faulty position. The thighs, body, and head should rest on a single inclined plane, which should be about four feet in length. In this posture the head assumes a position of slight extension, thus facilitating respiration. The body should be prevented from slipping down the incline by securing the legs or feet. The plan of using hooks against which the shoulders rest is a faulty one, as they interfere with the free action of the chest-muscles.

Coming now to the administration of ether, we at once meet with an objectionable feature that cannot be entirely eliminated, viz., the disagreeable sensations of the patient, which usually begin with the first inhalation and continue up to the point when consciousness is lost. These sensations are due to two factors. The irritation of throat and larynx is caused directly by the ether-vapor. The sense of impending suffocation is due to an asphyxial element caused either by holding the breath or by breathing the same air over and over again, or by both.

There is a great diversity of opinion as to the time that should be consumed in producing full anesthesia. Appliances have been used for insuring such rapid generation of ether-vapor that complete narcosis results in one or two minutes. This procedure is clearly dangerous. Reeves has demonstrated that if pure ether-vapor, in large quantity, be carried into the lungs of a dog by means of a tracheal tube, death promptly follows from failure of the heart.

Another method of very rapidly inducing anesthesia consists in causing partial asphyxiation by the almost total exclusion of fresh air. This is a popular method, and is the one generally recommended in Germany, where ether now bids fair to divide the honors with chloroform. The advocates of this plan claim that it is free from danger. It has the advantage of consuming only a small quantity of ether. It has the disadvantage of causing, as a rule, extreme distress to the patient.

By adopting five or six minutes as the average time for complete anesthesia the patient suffers little discomfort, provided that up to about the point at which consciousness is lost the open method be used, and the ether-vapor be added to the inspired

¹ Read before the Ohio State Medical Society, May 18, 1894

air in a gradual and uniform manner. After many carefully-timed observations, supplemented by subsequent inquiry as to the sensations experienced by the patient, I have adopted this rule: The amount of ether inhaled is increased from zero up to the full quantity in a period of three or four minutes. After reaching this point about two additional minutes are required.

I prefer to use the Clover Inhaler, and in the following manner: The indicator in the beginning points, of course, to zero. After a few inhalations of air the indicator is moved to allow a slight admixture of ether-vapor. Many such additional quantities are liberated at short but uniform intervals until the indicator points to F, which means that all the inspired air passes through the ether-chamber. If the ether is turned on in this slow and even manner it arouses no resistance on the part of the patient, and, with a little encouragement, his breathing will be full and regular. As already intimated, about three or four minutes are consumed in this gradual increase of the anesthetic. Consciousness is almost abolished, and the rubber bag is now inflated and applied for the remaining two or two-and-a-half minutes which intervene until anesthesia is complete. After this point I discard the bag altogether. While I regard the Clover Inhaler as valuable in producing anesthesia, I consider it far superior to all other appliances for maintaining this state.

We now come to one of the most important features of the subject. The patient is anesthetized, and the problem is how best and most safely to prolong this condition during the operation. Here it is that the greatest blunders are made, many times through ignorance, often from lack of skill and judgment. The ideal plan is to select the proper level for the anesthesia, and to constantly endeavor to keep the vacillations which necessarily occur above and below this plane within the narrowest possible limits.

The wider the departure from this plan, the more dangerous to the patient and the more disturbing to the operator. Everyone has observed instances in which the ether is pushed to profound anesthesia; then fresh air with no ether is allowed until slight resistance is noted, when the ether is again pushed almost to the danger-line. At one time the breathing is labored and stertorous to an alarming degree, and again the ether is withheld so long that vomiting may ensue, and the patient sometimes so far rallies as to make it necessary for him to be restrained until anesthesia is again rendered complete. The surgeon is annoyed, now by the resistance of the patient and now by the unnecessarily deep narcosis. The operation is prolonged and the amount of ether consumed is largely increased,

thereby incurring unnecessary dangers during the operation and delaying the reaction afterward.

Fortunately it is seldom that the method is so vicious as this; but it is equally seldom that sufficient effort is made to keep the anesthesia at a constant level by continuous and carefully graduated inhalations of ether. Given in this continuous manner, the quantity of ether necessary to maintain anesthesia is surprisingly small, and it becomes less the farther the anesthesia is prolonged. In this connection it is well to remember that the reduction of bodily temperature which always accompanies the use of ether has been proved by Kapeller to vary directly with the depth of anesthesia and the amount of ether inhaled.

In desperate operations, undertaken with the idea of giving the patient the only chance of life, I believe that the result often depends as much on the careful and economic administration of ether as upon the celerity and dexterity of the operator.

There is a very important factor bearing on the quantity of ether consumed, which is entirely beyond the control of the anesthetizer, viz., the duration of the operation. Anesthesia has destroyed the necessity for the rapid and oftentimes over-hasty surgery of former times; but it has not created an excuse for the extremely deliberate and even leisurely methods sometimes adopted. Cases occur in which the patient might be enabled to endure anesthesia for a half-hour, but would succumb if the time were extended 50 or 100 per cent. Too often in fatal cases the exciting cause might be truthfully written "prolonged anesthesia."

Let us drop this digression and resume the consideration of maintaining the anesthesia at a constant level. The chief indications as to the depth of anesthesia are the conjunctival reflex, the degree of muscular relaxation, and the character of the respirations. As the changes in these symptoms indicate that the anesthesia is slightly insufficient or a little greater than necessary, the skillful anesthetist promptly increases or decreases by a slight amount the quantity of ether inhaled.

Now if the problem is complicated by the impossibility of knowing at any moment the ratio of ether-vapor inhaled, and by inability to change the ratio promptly, the solution can only be approximate—in other words, handicapped by this lack of precision, the anesthetizer is compelled to adopt a deeper level as his standard and to allow greater vacillations above and below this level. The chief value of the Clover Inhaler resides in the accurate control which it gives its manipulator over the amount of ether inhaled and the readiness with which it admits of changes in the quantity. Incidentally the ether-chamber is so constructed that the surface of vaporization is constant, whether it

contains little or much ether; consequently in a constant temperature the rate of evaporation is uniform. My object in dispensing with the rubber-bag is to avoid rebreathing of air. Buxton, one of the best authorities, strongly urges the superiority of this inhaler. He seeks to avoid the danger of the asphyxial element by entirely removing the inhaler after every fifth or sixth inhalation. One of the strongest claims made for the bag is that by furnishing warm air to the patient it lessens the danger to the lungs. This danger is equally well averted by keeping the air of the room warm. In fact, unless the room is warm, the evaporation is not sufficiently rapid to keep the patient properly anesthetized without the use of the bag.

In the next place I would call attention to a symptom which I always regard with apprehension. There is a point in the induction of ether-narcosis at which there is generally some muscular rigidity. This is, as a rule, but temporary. Occasionally it becomes intense, and persists after the abolishment of the corneal reflex. It is unnecessary to say that this is a condition of real danger; but in several instances I have seen a still more dangerous condition supervene. I have seen three cases in which death seemed imminent, and in each this condition of rigidity was followed by extreme muscular flaccidity and dangerous respiratory failure. Probably this state of affairs was due to some peculiar effect of the ether upon the muscle-fibers, causing over-stimulation, followed by extreme relaxation. Three cases are too few to justify reliable conclusions, and the supposed relation of cause and effect may have been merely coincident.

The final consideration is the importance of having a hot room in which to administer ether. The statement has been made that the inhalation of ether always tends to lower the temperature of the body. Let us for a moment consider the factors that cause lowering of temperature. The muscular system of the patient is at rest. It is often impossible for him to be more than thinly clad, and moreover a considerable portion of his surface may be moistened with water or other fluid, the evaporation of which chills him. If he were not anesthetized he would require, under these circumstances, a temperature of about 80° F. to make him comfortable. Other factors come into play when the ether is administered. The first effect of the anesthetic is to stimulate the circulation and drive an unusually large quantity of blood into the skin. This means rapid radiation of heat. Often the surface is bathed in perspiration, and the evaporation results in still further abstraction of heat. The evaporation of the ether reduces the inspired air to a low temperature. So we have unusual forces abstracting heat, not only from the surface of the

body but also from the interior—even from the blood-current itself. On the other hand the economy is still further embarrassed by diminished oxidation.

The lowering of temperature has a threefold bearing, increasing the danger of shock, increasing the danger to the lungs, and increasing the danger to the kidneys. Tait records an observation made years ago showing the effect of ether on the kidneys. The case was one of urinary fistula in which a ureter had become imbedded in the cervix. From a point on the infravaginal portion of the cervix the urine could be seen dropping as it was emptied from the ureter. The patient was anesthetized by ether in order that the fistula might be closed. After full anesthesia, when the operator was about to proceed he was unable to find the fistulous opening, as the urine had ceased to drop. After several days the attempt was again made, with the same result. A third time the attempt was made, using chloroform as the anesthetic, when there was no trouble. It is a common observation that little urine is excreted for some hours after ether-narcosis, though the blood-pressure is often increased. Of course ether should not be administered to one who has diseased kidneys. And it is well to be certain not only that the kidneys are sound, but also that they are doing their work well. A few days' delay, to get the kidneys in good working order by the use of diuretics, is often a matter of importance that is generally overlooked.

The danger of bronchitis is due to the tendency of the cold vapor to freeze the lungs. This can be largely averted by having the air of the room sufficiently warm. It is also dangerous to the lungs for the patient to be placed in a much cooler room immediately after the operation. The ether is eliminated largely through the lungs by evaporation from the blood-stream. In this process heat is required. If the inspired air is not sufficiently warm the heat required for the evaporation of the ether will be abstracted from the lungs.

The plan most generally adopted to secure the warmth of the patient consists in the application of heat in the form of hot water. This is not only inconvenient, but has the serious drawback of having the least utility when most needed. We must remember that the problem is really to lessen the abstraction of heat from the body. If we resort to hot water it is impossible to apply heat to more than a small area of the body. If the heat in this area is higher than that of the body the blood-current absorbs heat at this point and distributes it to other portions. As long as the circulation is good this process is well maintained. Indeed, it may be carried too far and produce heatstroke. But should a condition of shock arise, the circulation falters, and there is little or no means of dis-

tributing the heat, so that at the very moment when it is indispensable it is not available. By supplying heat in the form of hot air we have the patient enveloped in an equable temperature, and we furnish a constant supply of heat for the vaporization of the ether. In the regulation of the heat in conformity with the needs of the particular case I believe that we have the means of eliminating the two greatest dangers of ether, the danger to the lungs and the danger to the kidneys.

By the aid of a hot atmosphere I have seen ether used safely in cases of bronchitis, and I know that since adopting this method I have noticed decidedly more prompt reaction after the operation. The value of the plan was emphasized and forced on my notice in the case of a woman with an extra uterine pregnancy. She had not consented to an operation until after the third attack of pain and shock. The operation was undertaken while there was still some shock, and it was feared that this condition would be dangerously increased. The day was cold, and instructions had been given to have the room well warmed. When the operation was begun, the room had been heated to a high temperature, and as it was small it was thought unsafe to open windows. The operation was concluded with considerable discomfort to the operator and assistants. Contrary to our apprehensions, there was little shock, though free hemorrhage occurred during the operation. The id. a forced itself upon us that shock had been greatly lessened by the heat of the room.

I did not adopt this suggestion on the evidence of the single case, but have tested it since in several hundred cases, and have come to the conclusion that a hot room is indispensable to the safe administration of ether. The temperature should be from 80° to 90° F., depending on the condition of the patient and the nature of the operation.

A RÉSUMÉ OF TWELVE HUNDRED EXAMINATIONS FOR LIFE-INSURANCE.

BY WILLIAM H. DUKEMAN, M.D.,
OF LOS ANGELES, CAL.

DURING the last three years I have examined over twelve hundred applicants for life-insurance. While making such examinations I made a study of each and every subject, no matter whether the applicant gave the appearance of good or poor health. Every applicant was stripped of all clothing to the skin, as far as the waist, and all were examined minutely, carefully, and systematically, according to a recognized method of physical diagnosis. A complete record was kept of every examination made.

Of the whole number, 164 were rejected, failing to pass the required standard of examination.

There were, besides, 30 that were rejected by the medical directors of the respective associations on account of defective family history, from hereditary causes, or otherwise. Of these, the majority were good, sound risks.

The large number of rejections, which reach a little over 16 per cent. of the total examined, are accounted for principally as follows: Pulmonary tuberculosis, 76; heart-disease, 19; rheumatism, 14; asthma, 10; albuminuria, 11; hemorrhage from the lungs, 10; fistula in ano, 5; syphilis, 3; carcinoma, 2; renal colic, 4; hepatic colic, 2; chronic disease of the liver, 6; diabetes, 3; hernia, 3; intemperance, 7; emphysema, 3; chronic constipation, 7; chronic diarrhea, 3; and disease of the nervous system, 4. In some cases more than one cause is noted as a basis for rejection.

Among those rejected on account of their family history, although the applicant himself passed a satisfactory physical examination, the cause of rejection is noted as follows: For pulmonary tuberculosis in the family, 19; heart-disease, 6; kidney-disease, 6; carcinoma, 8; disease of the brain, 4; light weight, with a doubtful family record, 15; unknown, 15. For the last no reasons were given by the medical directors of the respective companies.

Of the whole number examined, there were 49 that had had one or more attacks of pneumonia since childhood. Of this number, 32 made complete recoveries, leaving no trace of the disease, while the remainder (17) gave evidence of more or less disease of the lungs, which was distributed as follows: In 4 the disease was *mainly* in the lower lobe of the right lung; in 3 in the lower lobe of the left lung; in 4 it extended over the greater portion of the right lung; in 2 over the greater portion of the left lung; in 1 it involved the upper lobe of the right lung; in 1 the upper lobe of the left lung; and in 2 the lower lobes of both lungs. While the lower portions of the lungs were mainly involved in 11 cases, there was, however, evidence of trouble in both apices as well.

As so many people come to California for their health it is readily understood how so large a number were rejected on account of tuberculous disease of the lungs, viz., 76.

Of this number I have noted as follows: In 14 the main trouble involved the left apex; in 20 the right apex; both lungs were involved in various places in 42. Fifty gave a history of heredity, while in the remainder (26) the disease was apparently acquired.

Of the 19 rejected on account of heart-disease, 13 presented mitral lesions, 3 aortic, and in 3 there were lesions of both valves. In 1 the apex was four inches to the right of the sternum and two inches below the line of the right nipple. In 1

there was a reduplication of sounds, two systolic to one diastolic sound, although the rhythm of the heart was preserved; the heart was displaced to the left of the normal. In most of the cases there was more or less cardiac hypertrophy. In only 7 was the heart in an abnormal position.

Of the 10 rejected on account of hemorrhage from the lungs, in 4 the hemorrhage had been recent, and there was evidence of progressive disease, while in the other 6 the hemorrhage was very slight and no evidence of disease was detected. The time that had elapsed after the hemorrhage occurred varied from four to ten years. I have also notes in which 6 applicants were approved who had had hemorrhage from the lungs more than ten years before, and have since been in good, sound health.

A notable feature in the personal history of all those having lung-disease was that they were perfectly well, except that occasionally they would state that at times they had a little indigestion and biliousness, and invariably would give negative answers to all inquiries concerning the diseases usually enumerated on the examination-blanks; a few would acknowledge having at times had a little bronchitis, but only when they should "catch cold," and a few more have a very dubious family history.

Of the 11 rejected on account of albuminuria, in 7 only did I find tube-casts; the other four seemed to be in the best of health, and have always been so. As this subject has received considerable attention of late by the profession, as regards risks for life-insurance, I believe the conclusion is that in many such cases in which no other evidence of kidney-disease exists the risks may be considered safe. While the condition may be considered a purely functional or normal and physiologic one, yet, however slight the proportion of albumin in the urine, as shown by Heller's nitric-acid test, I think it always indicates an abnormality of some kind; whether this be in the kidneys or due to faulty variations of blood-pressure elsewhere I cannot say.

Of the fourteen rejected on account of acute or inflammatory rheumatism, six had had five attacks; two had had four attacks; four had had three attacks; and two had each had one very severe attack. In eleven there were mitral lesions, and in two aortic. In only five was there deformity of the joints. While there were only fourteen rejected on account of rheumatism, I find that there were forty recorded that had one or more mild attacks.

Of the whole number examined thirty-eight had had one or more attacks of typhoid fever. Of this number four failed to pass on account of weakness of the heart's action.

Of the 1200, only forty-three were native Californians,

and of this number only three were rejected, viz.: one for pulmonary tuberculosis, which was hereditary, one for repeated attacks of rheumatism, and one for weak heart due to three attacks of typhoid fever. The others (1157) were persons that came to this State either for health, wealth, or the comforts of mild climate, and were, as a whole, exclusive of those rejected, not of the most robust, sinewy, hardy, healthy constitution one finds in colder climates. Their muscles and flesh did not have that hardness and elasticity and firmness characteristic of the man of the temperate climate.

Of the 1200 I find that tuberculosis in some form existed in the families of 217; this number, however, is not the total, as many applicants could not give the cause of death of parents or grandparents, as in many cases death occurred before the birth of the applicant, or during his early life. In the majority of the 217 the results of the examination and the physique did not come up to the standard of those in whom there was no heredity of tuberculosis. Of this number I have noted that in 191 the color of the eyes was blue, while the hair was dark-brown or black in very many. In only a few was the color of the eyes gray, while the others had either brown or black eyes, with very dark hair. The lung-expansion in the majority of these came up to the standard, but on investigation I learned that a large percentage had practised taking full inhalations. In some of them the chest-expansion was greatly above the average, as a result of the long-continued practice, which in some had been carried too far, and had given rise to a harsh respiratory murmur on both inspiration and expiration, and a more or less breaking up of the air-vesicles.

The greatest expansion in all cases was seven inches. The man in whom this was present was a native of New York, six feet tall, muscular, well-built, and weighing 210 pounds. The tranquil chest measured 40 inches, on forced inspiration the circumference reached 44½, and on forced expiration 37½. The man was not an athlete, nor had he ever practised lung-expansion. The respiratory murmur was soft, breezy, and even, and the man was in every sense what one would consider a perfect specimen of health.

Of the forty-three native Californians, with but one exception the lungs were in a normal healthy condition, and the soft, breezy character of the respiratory murmur was so characteristic that in many cases I could almost foretell the nativity of the individual. The lung-expansion of these was, however, below the average, perhaps as a result of the easy-going life, especially of the Southern Californian, whose climate rather conduces to quietude, if not laziness. These facts show that great lung-expansion is not essential to constitute good, sound

lungs. Of how many came to this State for their health it was impossible to get a correct account. In the answers to questions propounded to applicants for life-insurance the good side of health is invariably given, but I should venture to state that fully one-half came here because of failing health of some kind, and whether those approved will live their expectancy of life or average time allotted by life insurance companies, time alone can tell.

The applicants varied in age from twenty years to fifty-five years. The average was a fraction less than thirty-four years.

While many of these applicants came to California for the benefit of their health, which had suffered either by sickness, constitutional weakness, or the overwork of an active business life, the question naturally arises: Did not the change of climate have a favorable effect? In many it did, but more time must elapse before it can be stated positively whether or not the benefits will permanently strengthen such weakened constitutions. The city, however, is not the place for these individuals to make their home.¹ Los Angeles is not a much healthier place for such persons to live than is Philadelphia. But in the country, in various places of California, in the mountains and at the sea-shore, where the air is aseptie, with our mild climate, and with proper care, under good medical advice as to mode of living in this climate, etc., many persons can be found whose health has apparently been permanently restored, and many more are greatly benefited for a time only.

VALVULAR DISEASE OF THE HEART AND CHRONIC RHEUMATISM.¹

BY WILLIAM W. PENNELL, M.D.,
OF FREDERICKTOWN, OHIO.

BUT few years after entering on the practice of medicine it seemed to me that chronic rheumatism was a greater factor as a cause of heart-disease than had been pointed out by most authorities. Acting upon this idea, a rather systematic observation of such patients was instituted more than ten years ago, with the result of confirming the idea that cardiac disease was gradually developed as a complication in a large percentage of cases.

Regarding rheumatism as a diathetic malady, it is not strange that visceral entanglements should occur, especially in structures having a texture similar to that of the joints. Indeed, it is eminently proper to look upon rheumatism in any form as the expression of a diathesis or predisposition of the organism to a particular kind of inflammatory activity rather

than as resulting from cold, exposure and dampness, as well as improper diet.

In the last ten years I have had every opportunity to observe the course of chronic rheumatism in a number of persons. In all, twenty-five¹ were under study, every one of the number being afflicted with chronic rheumatism from the beginning, there being no history of an attack of acute rheumatic fever. Observations were made weekly or monthly in each case. Eighteen patients gradually acquired heart-disease, seven thus far escaping. True, most of these persons were beyond middle life, and some were in the last quarter, periods in which chronic rheumatism is most likely to develop, also the period in which senile changes were to be expected as the result of a long series of years of hard labor and exposure, in addition to the gradual wane of vitality, with the consequent nutritive alterations in the circulatory system.

There is, so far as am aware, no anatomic reason why the rheumatic habit should not produce ravages in fibrous tissue, though it be located outside the articulations. Just why some should teach that the fibrous rings of the heart and the fibrous material of its valves and arteries have exemption in the chronic form of rheumatism is difficult to understand. But few authorities mention the possibility of complications of the sort; and then the cardiac disease is generally said to have its inception in the acute rheumatic attack that precedes the chronic in many individuals. Fewer still are the writers who ascribe heart-disease directly to chronic rheumatism, pure and simple; but all are willing to believe that the age of the patient at which valvular disease manifests itself has more to do with its production than any diathesis.

In my experience persons with chronic rheumatism for the most part sooner or later manifest some form of heart-disease, and the lesser number escape such a complication. Those in whom it appears being advanced in life, the cause is ascribed to senility and not to rheumatism. On the other hand, the majority of old persons that have never had rheumatism of any kind do not exhibit alterations of the heart more frequently than of any other organ or structure. And yet it seems scarcely possible for a person of seventy years with chronic rheumatism to escape without some lesion of the endocardium. Out of a great many patients affected with the acute disease it has been my fortune to see but few have pericardial or endocardial complications from a single or subsequent attack; but individuals subject to repeated or recurring seizures do for the most part become victims of heart-disease, more especially when in the interval between

¹ See article by author: "Where to Send the Consumptive in Southern California," in New York Medical Journal.

² Read by title before the Ohio State Medical Society, May 18, 1894.

¹ Ranging from thirty to seventy years of age.

acute invasions they suffer more or less with sub-acute or chronic articular inflammation.

These facts demonstrate the essentially diathetic nature of the disease, just as a case of acute pericarditis or endocarditis may be soon followed by acute articular rheumatism; or, as I have a few times seen, an individual with a chronic valvular lesion, evidently rheumatic in character, may acquire chronic rheumatism of the joints. This habit, if not hereditary, is quite readily acquired by some persons who seem to require less exposure, dietary errors, and dampness than other persons to induce an attack.

On the theory that rheumatism is the result of diathesis, it is reasonable that the same *materies morbi* which, by its presence or influence, alters the nutrition of the fibrous structure of joints, would, by constant circulation in the blood, gradually manifest itself in other fibrous tissues, especially in the heart, as this organ is unremittingly exposed to its influence.

The difference between acute and chronic rheumatism resides in the intensity and duration of the disease. They seem to be the same, modified by the patient's inherent power of resistance. Be that product of the individual peculiarity uric or lactic acid, or both, or whatever it may be, it has a predilection for fibrous and fibro-serous tissues. If one form is specific, the other is specific; the cause consisting either in the production within the body of morbid matter from interference with excretion from continued exposure to cold and wet or in the elaboration of toxins from improper food. These facts are far from establishing the specific nature of rheumatism. They more clearly demonstrate its constitutional character. The general type of the acute form is shown by the thoracic and abdominal complications that often occur, as well as keratitis and iritis, and by its affinity for the nervous system in the occasional production of chorea. So in the chronic variety. In this form the occurrence of thoracic and abdominal troubles due to a rheumatic cause are pretty well recognized.

In addition to these facts, it is reasonable to suppose that it has been the experience of other physicians, in common with myself, to have observed headaches in chronic rheumatic patients that were not due to disease of heart, liver, stomach, or kidney, but subject to the variations of barometric pressure and relievable only by anti-rheumatic treatment, dietary, sanitary and medicinal. Our experiences have, no doubt, coincided in that we have once in a while seen a case of chronic rheumatism persist for four or five years and then vanish as mysteriously as it came, leaving the patient little the worse for the visitation except for a stiff joint or so.

Our common experience is to see the gradual deterioration wrought by primary continuous chronic

rheumatic disease; joints becoming weaker and stiffer; structural changes in ligaments, and capsules becoming more pronounced and accompanied by pain of variable severity, and yet the general health of the patient remain quite good, although he is unable to work and is hardly able to walk without crutch or cane. Chronic rheumatism is said to scarcely ever kill. This may be true. But it has seemed to me to do the reverse by inducing endocardial and arterial changes that result in stenosis, insufficiency or endarteritis, that indirectly do kill, or else I have had more than my share of coincidences, or am woefully shortsighted.

Complete recovery hardly ever occurs except in recent and mild cases which are removed from the conditions that feed the rheumatic habit, and thus receive permanent improvement, if not cure. Those that have had the disease for but a comparatively short time should not be discouraged with the idea of its incurability, but should rather have pointed out to them a possible means of escape, if not from the entire disease itself, at least from its ultimate consequences, by permanent arrest. For those cases that have become confirmed and intractable and have as yet shown no cardiac disturbance, as large a degree of immunity as possible should be secured against such complications. And when heart-disease has developed, its consequences should be avoided so far as they can be. In these latter cases we can secure the good effect of internal medication: namely, that directed to the cardiac complication, and that is the persistent use of digitalis.

Medicines do little good for chronic rheumatism. Its best treatment consists in massage, electricity, baths and diet. Elimination is the watchword in this disease. Massage, through its effect on the circulation favors excretion, as do baths, by stimulating the skin. The utility of diuretics and laxatives cannot be overlooked. The diet should be as nearly vegetarian as possible to preclude the introduction of toxic ptomaines or their production within the alimentary canal. This paper is, however, not devoted to the treatment of chronic rheumatism, but rather to point out in a feeble way one of its most fearful consequences. The lesions of the heart do not differ in their symptoms from those due to other causes, and, like those arising in the acute disease, have a more favorable prognosis than those resulting from degenerative changes that are necessarily progressive.

Perhaps they are more amenable to arrestive treatment than the acute, as their growth or development is slow; but once developed to any degree they are permanent, their situation determining their gravity. If in the management of this disease these lesions could be avoided our work will not have been in vain.

CLINICAL MEMORANDA.

SOME INTERESTING SURGICAL CASES, WITH THE EXHIBITION OF AN ORIGINAL INSTRUMENT.¹

BY SCHUYLER C. GRAVES, M.D.,

OF GRAND RAPIDS, MICH.;

VISITING SURGEON TO THE U. S. A. HOSPITAL AND SURGEON TO THE CHILDREN'S HOME.

THE cases that I have to report are: 1. Gould's extirpation of the penis, with perineal transplantation of the urethra, for malignant disease; and, 2. Phelps' operation for the cure of talipes, particularly that variety known as "talipes equino-varus congenitalis."

The instrument is a nephrectomy-clamp, devised for assistance during the operation of lumbar nephrectomy.

1. To me it has long appeared an insufficient and hence an unsurgical procedure to remove a portion of the penis for malignant disease. When we find malignancy connected with and limited to viscera elsewhere; when we find the breast, or the uterus, or the kidney, or the testicle, the subject of disease of such nature, we unhesitatingly remove the whole organ. It is best so to do; but with the penis; with an organ so fairly crowded with bloodvessels and lymph-vessels; with so many inviting nooks and crannies and pathways, where beckoning nymphs offer such warm hospitality to the individuals comprising the invading malignant horde, this procedure (extirpation) is very seldom done. It ought to have been done oftener in the past; it will be done oftener in the future.

The operation, which takes its name from Mr. Pearce Gould, of London, although it is also known as Gouley's operation (from Dr. Gouley, of New York), and which I had the pleasure of doing at St. Joseph's Hospital, Omaha, Nebraska, in June, 1893, is done as follows:

As the meatus is generally occluded, it is necessary to do a limited amputation before it can be possible to insert a sound into the urethra. Lateral tegumentary flaps of sufficient size are first made at the base of the penis; then a knitting-needle is pushed through the organ at its root (inside the flaps) and a rubber constrictor cast loosely around and below it. The penis is then cut away about one inch from the needle (on the distal side, of course), a proper-sized steel sound passed into the urethra as far as the prostate, or thereabouts, and the ligature tightened. All bleeding will now cease.

At this juncture a dissection is commenced along the raphé scroti, the incision deepening between the testicles, care being taken not to enter either tunica vaginalis, until the corpus spongiosum is exposed down to the scroto-perineal junction. Then the incision is continued deeply to about the center of the perineum.

At this point in the operation the urethra is entered at the peno-scrotal junction, the sound withdrawn, the corpus spongiosum dissected away from the corpora cavernosa and delivered in the perineal incision, from the bottom of which it will hang like a tail.

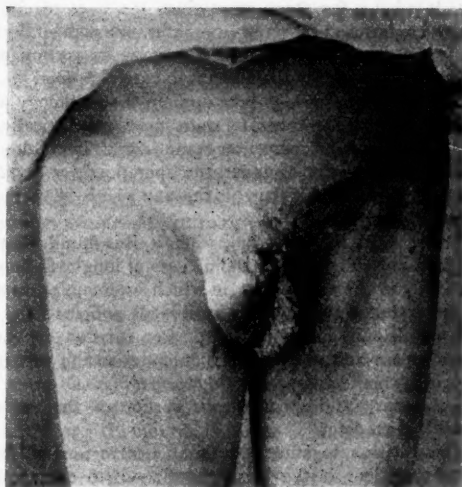
The corpora cavernosa are now dissected out even to their origin on the rami ischiorum. The dorsal and cavernous arteries will here need a little attention.

There are two of each, but they can easily be caught and tied.

After the arrest of hemorrhage by ligature or torsion and the free use of hot water, the edges of the incision are brought together and sutured. The trailing corpus spongiosum is cut off a little more than flush and sutured *in situ*.

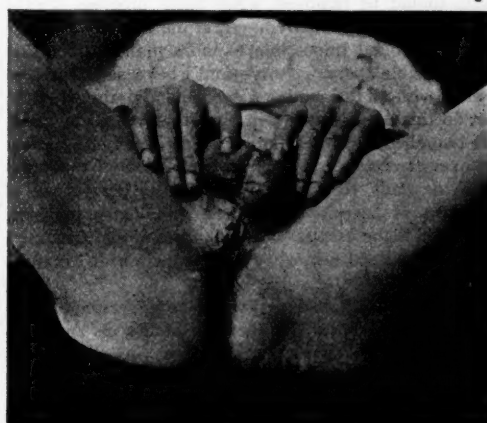
In disposing of this highly surgical operation, let me sum up its good qualities: 1. It is radical. 2. It is fairly

FIG. 1.



Showing absence of the penis.

FIG. 2.



Showing perineal meatus.

easy of performance. 3. It is not particularly dangerous. 4. It concerns parts external to the triangular ligament, and, hence, does not involve the compressor urethrae muscle, thus allowing of as much urinary control as before the operation. 5. The incisions are made in the best possible fashion for subsequent drainage. 6. The outflow of urine takes place at the very bottom of the

¹ Read before the Michigan State Medical Society.

incision, thus avoiding wound-infiltration. As to bad points, I know of none.

The man on whom I operated passed his water unaided on the second day, and on the eighteenth he went to a photograph-gallery where the appended photographs (Figs. 1 and 2) were taken. One picture shows the absence of the penis, and the other the new meatus urinarius in the perineum. Eight months after the operation there was no return of the disease. The subsequent history has not been obtainable.

2. It is but a few short years since the lives of children were tortured by screw-apparatus, or more or less ineffectual work was done by subcutaneous section of tendons and fasciæ in the attempt to cure club-foot.

It is not my purpose to take up here the pathology of talipes. I wish, however, to state, most emphatically, that for all cases of congenital equino-varus in children about the age of five or under, the operation, *par excellence*, for their absolute cure, is the one which bears the name of Phelps.

This operation has its limitations. It is found wanting, as I myself have learned, in cases of long-standing, especially in the adult forms, in which osteotomies must be done; but in the young types it is all sufficient.

It consists in making a deep, free incision on the inner aspect and sole of the foot, commencing just in front of the malleolus, and cutting *everything*. Of course, a preliminary and subcutaneous section of the tendo Achillis is made.

This incision, together with forcible correction will be found sufficient, in the cases mentioned, to overcome almost any difficulty. The member, or members, should be forcibly *over-corrected* and put up in plaster, allowing the widely-gaping wound to fill with blood-clot and heal, after the method of Schede. In two weeks the casts should be removed, when much progress toward healing will have occurred. If, at the time of the operation, it is found impossible to more than correct, that is, impossible to *over-correct*—and I have seen cases in which, with all the cutting I deemed advisable, I could not do this myself—you will find that when the casts are reapplied, two weeks later, you can then bring about an over-correction. Of course, the success of this operation depends very much upon a strict observance of the laws of asepsis. The ideal, and hence the best, operation is the aseptic one; but I know that the operation will succeed even when healing by Schede's method fails to take place.

In this connection I desire it to be understood that I have made no particular mention of asepsis and antisepsis in these reports, because I have considered it unnecessary to do so. This body of the best surgical intelligence in the State of Michigan needs no reminder of what is now such an established fact.

I take pleasure in presenting photographs of a child with club-foot, taken just before and two months after a Phelps operation (Figs. 3 and 4).

3. During the course of a lumbar nephrectomy done a year or more ago I noticed that the patient was much shocked. The operation was a difficult one, and I had reached the stage at which the pedicle is to be tied. In order to do this I would have been obliged to add to my incision or to consume considerable time in securely

ligating the stem. Either of these horns of the dilemma would have greatly added to the existing shock, thus very materially diminishing the patient's chances for life.

FIG. 3.



Talipes equino varus.

FIG. 4.



Result of Phelps' operation for talipes equino-varus.

Upon the spur of the moment I seized a long pedicle clamp-forceps, guided it by sense of touch, clamped it,

and cut away the diseased mass. We put the patient to bed, and, after some hours of external and internal stimulation, she rallied, and, subsequently, underwent an uninterrupted recovery. The use of the clamp unquestionably saved the woman's life.

It was a new procedure for me. I had used the clamp in vaginal hysterectomies; but in such operations the arteries with which one has to deal are long and tortuous—they favor thrombosis. With the short, thick, able-bodied renal trunk or trunks, however, it is different. This form of clamping was a new, and, for the time being, rather an unpleasant experience; but it worked well. The clamp was removed in forty-eight hours. I immediately set about devising an instrument for use in similar emergencies, an instrument which would bring into play the new application of an old principle.

After many cadaveric nephrectomies and various modifications, the instrument was made to present the features which it now bears. (Fig. 5.)

FIG. 5.



Graves' nephrectomy-clamp.

It has the following weak points: 1. It is an instrument that will not have a very extended use, inasmuch as nephrectomies, particularly lumbar nephrectomies, are not common. 2. It causes a slough, which must, in time, come away, and thus prevents the immediate closure of the wound.

The following good points, I think, will speak for themselves: 1. It is easily, quickly, and safely applied. 2. By reason of its shape it can be included in the dressings and allowed to remain several days. 3. It is applicable to either side of the body, that is, to the pedicle of either kidney. 4. It is separable and smooth, and hence can readily be rendered aseptic.

In an emergency such as that described the instrument will, in my opinion, be found a life-saver.

The instrument can be obtained from the Detroit Pharmacal Co.

ABSENCE OF THE VAGINA, WITH HEMATOMETRA FROM RETAINED MENSES.

BY JOHN C. DA COSTA, M.D.,

OF PHILADELPHIA;

GYNECOLOGIST TO THE JEFFERSON MEDICAL COLLEGE HOSPITAL AND TO ST. AGNES' HOSPITAL.

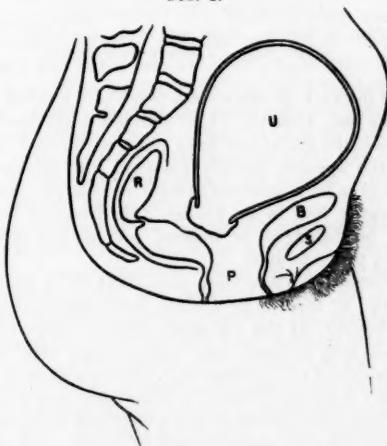
ATRESIA of the vagina, although not common, is still occasionally met with, but cases of absence of the vagina are very rare. The history and result of operation in the following case may, therefore, prove not uninteresting.

S. M., a negress, fourteen years old, was brought to me April 13, 1893, by her mother, who stated that the girl had been ill for some months. The girl was evidently losing flesh, and her face was expressive of intense suffering. Questioning elicited the statement that she had never menstruated and that all of her pain was in the lower part of the abdomen and pelvis. She had been perfectly well until the fall of 1892, when she was seized with severe abdominal pains, lasting three or four days, then passing away, but returning in three or four weeks. From that time she had never been free from pain, day or night, and the abdomen had been gradually increasing in size.

A look at the girl verified her statement. Her figure was that of a woman. The breasts were well filled out and the hips well rounded.

Examination of the abdomen showed the lower part to be occupied by a tumor about the size of a uterus in the fifth or sixth month of pregnancy, although the shape was different. The tumor was not the pear-shaped enlargement of pregnancy, but was nearly round, dipping well down into the pelvis; it gave evidence of fluctuation, and felt like a thick-walled cyst.

FIG. 1.



Condition before operation.

U, distended uterus. B, bladder. P, perineal body. R, rectum. S, symphysis pubis.

Examination of the vulva, or rather for the vulva, showed no vulva at all. The whole space from the urethra to the anus was a firm, fleshy mass, without any sign of either hymen or vagina. It was smooth, without any discoloration or bulging such as is seen in cases of

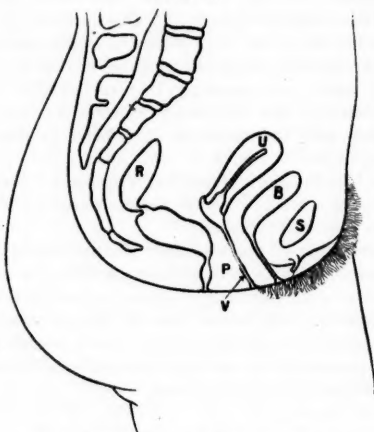
imperforate hymen, and was free from inflammation or tenderness.

Rectal examination showed, at a full finger's length from the anus, the presence of a fluctuating mass between the rectum and the bladder, and indistinctly there could be felt something suggesting a uterine cervix.

From the examination, a diagnosis was made of absence of the vagina with hematometra from retained menses.

An operation was decided on, and performed two days later, on April 17, 1893. With a large, slightly curved sound in the urethra and a finger in the rectum as guides, a good-sized incision was made transversely below and carried up parallel with the urethra, using the knife and scissors for cutting and the finger for tearing,

FIG. 2.



Condition one year after operation.

U, uterus. B, bladder. P, perineal body. R, rectum. S, symphysis pubis. V, newly made vagina.

until a distance of more than two and a quarter inches was reached, when the finger detected slight fluctuation. A good-sized trocar was then plunged through the tissues, the opening quickly enlarged with dilators, and the large mass of retained menses evacuated. Some of the matter had to be broken and detached before it could be dislodged or washed out by the antiseptic douche that was used.

Antiseptic douches were used daily for a while, and after two or three days a glass Sims plug (second size) was inserted, as the cut made was so large that the smallest plug dropped out. Larger plugs were inserted at intervals of two or three days, and in a short time the girl was discharged, well. I have seen and examined her within a month (more than a year after the operation), and she remains perfectly well, is plump, well rounded out, bright and cheerful, and menstruates regularly every month, without pain. She still wears the largest size Sims plug, and the opening shows no tendency to close.

The case presented certain peculiarities. One was the shape of the cervix. In a case of labor the cervix is obliterated, and the finger detects no cervix at all, but only a round hole in the uterus. In this case the shape of the cervix was preserved, and the part felt like a hollow cylinder, with an opening of perhaps an inch

and a quarter in diameter and a wall about one-quarter of an inch thick. The cervix has never closed, as that of an ordinary uterus does after being emptied, but remains open, with an inside diameter of about an inch.

Secondly, the divided parts are not covered by healthy mucous membrane, as I hoped they would be, but appear very much like the inner wall of a cyst. The incision shows no tendency to close, as usually occurs in such cases.

It is fortunate that in view of the great accumulation and distention, no injury happened to the tubes, ovaries, or other adnexa of the uterus.

TOXICOLOGIC NOTES.

A CASE OF STRYCHNIN-POISONING.

BY LAMBERT OTT, M.D.,
OF PHILADELPHIA.

AT 11.45 A.M. an unmarried girl, twenty-five years old, took one hundred and twenty tablets, each containing gr. $\frac{1}{10}$ of strychnin sulphate. At 12.45 o'clock, or an hour later, I reached the girl and found her in severe general spasms, with clonic contractions of the extremities, extension of the head on the back with sufficient violence to throw her from a large arm-chair to the floor, where the contortions continued, their major force centering in extreme ophisthotonos, a sufficient interval being left between the body and the floor for a person to creep through. The eyes were turned up, and consciousness was apparently lost. I at once gave ether, to which the spasms yielded surprisingly soon, or else the period of relaxation had come. I then substituted chloroform, which I gave freely; also injecting $\frac{1}{4}$ gr. of morphin hypodermatically. All of these measures were required before the extreme rigidity subsided. In lifting the girl to place her on the bed her spine was found to be still rigid, but otherwise she seemed well relaxed. Dr. R. G. Stretch now joining me, we gave chloroform continuously for two hours, and every half hour $\frac{1}{4}$ gr. of morphin with $\frac{1}{10}$ gr. of atropin, only remitting the chloroform whenever the rigidity of the jaws and abdominal muscles relaxed, this being our sole guide as to the degree of narcosis necessary. All of this time the girl remained entirely unconscious, with the eyes divergent, the right pupil contracted and the left dilated, and later the right dilated and the left contracted. Her lower jaw was firmly set, the lower front teeth being nearly hidden behind the upper incisors, and only becoming visible during deep chloroform-narcosis.

After two-and-a-half hours' constant labor, thinking that the worst was over, and the general condition of the patient being good, we withdrew the chloroform temporarily, as the muscles of the jaw and abdominal walls were thoroughly relaxed, when suddenly, after a few moments' interval, there was a sharp and audible snap, caused by the teeth coming together; the muscles of the jaw and abdomen became rigid, and respiration ceased for a minute-and-a-half, with the development of deep cyanosis of the face and extremities and venous engorgement of the neck, while there was only slight rigidity of the limbs. This condition lasted so long that the appearance indicated what we supposed

was death. All seemed hopeless and useless; but as a *dernier ressort* several hypodermatic injections of brandy were made directly into the veins, and after what seemed an endless time the girl apparently relaxed in death, and the rigid jaw dropped. In a short time, however, a faint effort at inspiration was noticeable, and again, after a painful interval, there followed another faint inspiration, until gradually respiration returned, with a restoration of her natural color. In twenty minutes the breathing became stertorous, remaining so for ten minutes, when, suddenly, the lower jaw again became rigid, respiration partially ceased, some cyanosis developed, and asphyxia seemed imminent, but by pushing the chloroform danger was averted.

Then followed a period of relaxation of twenty-five minutes, when suddenly the lower jaw again became spastic and the respirations jerky, with the head drawn back; but this third attack, being much fainter than the previous two, gave us the comforting assurance that the poison had nearly spent itself, three-and-one-half hours having passed since the initiatory symptoms. After the fourth hour the girl lapsed into normal slumber, manifesting still a slight tendency to rigidity of the lower jaw, but otherwise her improvement was rapid. She regained partial consciousness at 8 o'clock in the evening, having been unconscious seven hours and forty-five minutes. A half-hour after the induction of chloroform-narcosis, in an interval of relaxation, she vomited spontaneously half a gill of mucus, which probably contained some of the strychnin not yet absorbed.

The lessons to be learned from this case are, in cases of strychnin-poisoning, to give chloroform freely, morphin and atropin in decided doses frequently, and never to trust the delusive interval of apparent relaxation until after at least four hours have passed; as long as the lower jaw and the abdominal muscles are spastic, or are relaxed and become suddenly rigid, sudden asphyxia may be induced by tonic spasms of the respiratory muscles. At no time after giving opium was there equal and simultaneous contraction of the pupils, nor in the one contracted was the narrowing permanent or "pin-head." The only time we found a weakened and nearly imperceptible pulse was during the first attack of asphyxia, when we thought her in apparent death, but during the spasms and in the intervals of relaxation the volume and frequency of the pulse were not materially altered. I was struck by the fact, however, that so grave a condition, each moment seeming about to bring death, was attended with so little change in the character of the pulse. The seven hours and more of unconsciousness were probably not due to the poison, but more likely to the chloroform and morphin, although unconsciousness set in with the first severe spasm before the anesthetic had been administered to complete relaxation. The following two days of convalescence were attended with no special drawbacks, other than the general soreness and aching, with some headache, anorexia and nervous exhaustion. On the first and second days the temperature rose to 101° , subsiding on the third day, after which followed rapid and complete recovery.

An emetic could not have been readily given when the patient was first seen, as, by reason of the severe convulsions, deglutition was impossible, and besides the

patient had already absorbed the major portion of the poison ingested. Nor was it deemed wise to trust to the slow absorption by the bowel of potassium bromid and chloral, although these could have been thrown into the rectum while the patient was narcotized, and thus the first dangerous attack of asphyxia might possibly have been averted.

A CASE OF CARBOLIC-ACID POISONING; RECOVERY.

BY WALTER R. WEISER, PH.G., M.D.,
OF SPRINGFIELD, MASS.

ON the afternoon of June 16th I was called to see a strong, well-developed married woman, twenty-one years old, who had been found on the floor of her room unconscious and in complete collapse. The heart's action was weak and labored; the radial and carotid pulses imperceptible; the respirations shallow and at long intervals; perspiration profuse; the skin cold and clammy, and the pupils slightly dilated. The lips and mouth were found to be blistered, and further examination showed blisters upon the right arm and shoulder.

No one knew how long the woman had been in her room or what she had taken. I administered apomorphin hydrochlorate, gr. $\frac{1}{16}$ hypodermatically, with the result of inducing free emesis a few minutes later, the vomited matter having a distinct odor of carbolic acid. After another hypodermatic injection of strychnin sulphate, gr. $\frac{1}{16}$, I began the administration of magnesium sulphate by the mouth, alternating with olive-oil.

At this stage Dr. George D. Weston was called in consultation, and, together, we continued the treatment instituted, with occasional hypodermatic stimulation. After about four hours the patient began to regain consciousness. The reflexes were entirely abolished and there was almost complete loss of power upon the right side. She complained of no pain, but pleaded constantly for water. Urine of a blackish-green color was voided about six hours after the ingestion of the poison. The face was much swollen on the right side, and became more so during the night. On the following morning the parotid gland on the same side was found to be hard and extremely sensitive and as large as a chicken's egg. As the blisters showed that the saliva had drained from the right side of the mouth, it no doubt passed into Stensen's duct on the same side.

Upon questioning the patient, during convalescence, I learned that about seven drams of carbolic acid (95 per cent.) had been taken four hours before I first saw her. After drinking this, she says she remembers nothing until she found us working over her. Her recovery was uninterrupted. The day following the ingestion of the poison there was considerable retro-sternal and epigastric pain. The face remained swollen and painful, but the tumefaction rapidly yielded to applications of belladonna and mercurial ointments. The woman complained of numbness and tingling in the right arm and thigh, and marked anesthesia was noted; but this, with the loss of power, disappeared in the course of two or three days.

A coincidence in the case was the fact that for two years past the woman has been suffering with symptoms of cystitis, passing urine very frequently in small quantities, and always with pain. Since taking the acid the

urinary symptoms have wholly disappeared, and up to this writing there has been no recurrence. The internal after-treatment consisted in the administration of bismuth subnitrate and milk by the mouth and opium by the rectum, so that any possible favorable influence upon the vesical condition must have been due to the action of the acid in the process of its elimination.

The dilated pupils, the paralysis, the slow respiration, and the local effect on the parotid gland were of especial interest.

MEDICAL PROGRESS.

Successful Suture of the Divided Ends of a Ruptured Urethra.—ANDERSON (*Lancet*, No. 3692, p. 1372) has reported the case of a man, thirty-two years old, who in jumping backward off a bicycle alighted straddlewise on the hinder wheel. The accident was followed by much pain and great swelling and discoloration of the perineum from extravasation of blood into the tissues. There was no bleeding from the urethra, and no attempt had been made to pass urine. An endeavor was made to introduce a catheter, but without success. Ether was then administered and an incision made into the perineum in the middle line, exposing a large cavity filled with blood-clot. After clearing away the extravasation the urethra was found to be completely divided a short distance in front of the triangular ligament, the two ends being separated by a distance of about an inch. An effort was made to pass a catheter in the ordinary manner, but this was found impracticable, owing to the difficulty of fixing the vesical end of the torn canal. A soft No. 10 olivary catheter was then introduced through the wound into the upper opening and pressed on for some distance into the bladder. The other end of the instrument, which had previously been trimmed to a convenient shape, was then passed through the wound into the lower urethral opening and brought out at the external meatus. This done, the two torn margins of the canal were united by catgut sutures, and the wound was dressed with iodoform. Four days later the catheter was withdrawn, and as it had become encrusted with phosphates, the patient suffered a good deal of pain. A No. 8 silver catheter was then passed into the bladder under an anesthetic. The instrument was retained in place for ten days, the tube being kept clear by occasional injections of a solution of boric acid. After the withdrawal the evacuation of urine could be effected without difficulty, and nothing further was required beyond the occasional passage of a catheter. The man was dismissed four and a half weeks after the operation, and no tendency to the occurrence of stricture showed itself.

To Clean Soiled Slides and Cover-Glasses FUNK (*Centralblatt für Bakteriologie und Parasitenkunde*, xvi. Bd. No. 3, p. 113) recommends the following course of procedure: The slides and covers are placed for some time in oil of turpentine, the one being separated as far as possible from the other. They are then placed in a beaker and some ten or fifteen grains of potassium chlorate and an ounce of hydrochloric acid are added. The beaker is covered with a plate of glass to prevent the escape of the vapors of chlorin, and is heated over a water-bath until the covers are decolorized. The glasses

are now rinsed with hot water and placed in a mixture of equal parts of pulverized soda, talcum and sifted sawdust, sufficient water being added to make a mushy mass. The beaker is heated over a water bath for half an hour and is frequently shaken. The glasses are now again rinsed with hot water and a small quantity of dilute hydrochloric or acetic acid is added. They are finally rinsed once more with hot water or with ether and alcohol, and then dried with a soft cloth.

The Treatment of Ruptured Kidney.—BRIDGON (*Annals of Surgery*, vol. xix, No. 6, p. 641) reports four cases of ruptured kidney, and gives the following indications for treatment: In cases of moderate severity the treatment will be mainly expectant; absolute rest, a bland fluid diet, and the application of ice-compresses will frequently lead to a successful issue. If an aseptic process should ensue, as indicated by rigors, sweats, and elevation of temperature, a lumbar incision should be made, and be followed by irrigation and drainage of the infected cavity. In cases in which the peritoneum is lacerated, generally as a result of more severe injuries, and in which the condition is rarely recognized until an abdominal section is made in search of the cause of the acute anemia, suspected to be due to internal hemorrhage, the indication in most cases is to supplement the section by nephrectomy.

THERAPEUTIC NOTES.

Successful Employment of Hot Baths in a Protracted Case of Cerebro-spinal Meningitis.—AUFRECHT (*Therapeutische Monatshefte*, August, 1894, p. 381) has reported a sporadic case of cerebro-spinal meningitis in a man, twenty-five years old, which failed to yield to ordinary measures, and in which a condition of somnolence had existed for ten days, and a fatal issue seemed unavoidable. The temperature was not elevated and the pulse was small and frequent, and it was decided to give the patient a daily bath at a temperature of 104° for a period of ten minutes. After the first bath some improvement was observable, and the sensorium gradually cleared, the rigidity and painfulness progressively subsided, consciousness returned, the functions of the sphincters were resumed, articulation became possible, and the internal strabismus that had been present disappeared. When, after nine baths had been given, the bathing was discontinued, the symptoms manifested a tendency to return. Three additional baths were given, after which the symptoms remained permanently in abeyance and the case went on to permanent recovery.

Potassium Permanganate for Diphtheric Angina.—At a recent meeting of the Société Médicale des Hôpitaux, CATRIN (*La Semaine Médicale*, 1894, No. 34, p. 346) reported the topical employment of potassium permanganate in the treatment of a small number of cases of diphtheric angina. A solution of 1 to 200 was employed, and the applications were made every two, three or four hours, according to the severity of the case, by means of a bit of cotton wrapped around a wooden stick. The treatment also proved efficacious in cases of angina due to streptococci.

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SATURDAY, SEPTEMBER 8, 1894.

THE FORMATION OF NEW ORGANS TO REPLACE OTHERS DESTROYED, REMOVED, OR WANTING.

We have already published an account of the remarkable case of Prof. J. SOLIS-COHEN in which, following total extirpation of the larynx, there was developed a structure answering the purpose of a larynx, with its vocal bands, and giving all the essential qualities of speech.¹ We have also called attention to the most noteworthy case of HUSELTON,² in which, as a result of attempted suicide, the epiglottis was severed from its normal connections, leaving the larynx uncovered, and in which a perfectly functional substitute was spontaneously formed *de novo* from another part of the pharyngeal wall.

Doubtless inattention to or ignorance of the possibility of such new-formations may have led to the overlooking of their frequent existence.

To these startling facts we now may add the following interesting account of an organ found in the sheep by Mr. SYDNEY D. ROWLAND, B.A., of Downing College, Cambridge, England, and published in the *Journal of Anatomy and Physiology* for April, 1894:

¹ See THE NEWS, July 23, 1892, p. 98; February 18, 1893, p. 195; March 17, 1894, p. 281.

² See THE NEWS, June 30, 1894, p. 722.

The conditions of interest met with are the persistence of a patent foramen ovale, together with some arrangement for valvular protection, and the peculiar features of such valves.

In the specimen which first attracted attention the following was the condition:

The foramen ovale was circular in outline, and measured 2.5 cm. in diameter. The valve consisted of a membranous flap 3 cm. in length and 2 cm. in diameter, and was attached round about four-fifths of the opening, the antero-inferior one-fifth of which was free from the valve and uniformly rounded. The free edge of the valve was prolonged at intervals into fibrous cords, which were attached in groups of four or five to the auricular wall just above the line of origin in the mitral valve. These cords were not inserted directly into the wall of the auricle, but into small muscular columns, in precisely the same way as the chordæ tendinæ of the atrio-ventricular valves are inserted into the papillary muscles. The presence of muscle in these columns was proved by teased preparations stained and examined microscopically. . . .

Two other examples of this arrangement were found, but not so marked as in the specimen first observed; thus some of the cords apparently hung quite freely in the auricular cavity; these, of course, might have been attached in a similar way to the preceding during life, but as the specimen only came under examination after having been dissected by one of the members of a class, no positive statement can be made. The disposition of the valve was in all cases such as to prevent the flow of blood from the left into the right auricle; this is consistent with what we know of the relative pressure in the two auricles, that in the left being the higher.

Six other specimens were obtained exhibiting peculiarities, but as these were only modifications of one general plan, they may be described collectively. They may be divided into two classes—those in which the foramen ovale was open but small, and those in which the membrane which normally closes it was perfect, yet weak. In the first of these classes, of which there were two specimens, the aperture was about 1 cm. in diameter, and was prolonged into an oblique funnel lying in the auricular septum, as is usual in cases of open foramen ovale; but in nearly all cases distinct cords were present, connecting the free thin (left) edge of the funnel to the auricular wall. In the second class similar cords were present, but proceeding from those parts of the membrane which were weakest.

In all the cases, then, we have an arrangement of cords, or of cords and muscles, when the play of the valve is large, which would obviously take an important share in securing the efficiency of the valve by preventing reversion into the right auricle. In those cases in which there was no opening the cords would play an equally important part in strengthening the membrane, and by limiting movement, diminish the chance of the rupture by sudden shock.

From what structures normally present in the heart can we derive this arrangement of valves and cords? That the specimens form a progressive series in complexity of the same fundamental structure will, I think, be admitted. The embryonic septa naturally suggest themselves as the basis from which the valve might have

been derived, but BORN has shown that the foramen ovale is an entirely new development in the atrial septum, the septum superius completely fusing with the septum intermedium. ROKITANSKY has described the closing of the foramen ovale at birth as taking place by the formation of a fenestrated membrane, the fenestræ of which subsequently close up.

But if this closure was imperfect the condition observed might very easily and simply result by the persistence of that portion of the membrane that lies between neighboring fenestræ, as the cords, and that part of the membrane in which the fenestræ closed completely, as the valve-flap. The funnel-condition is easily explained by supposing that the lower border of the foramen grows to meet the upper, the cords retaining their original position of insertion. . . .

The great point of interest in connection with these variations is, however, their almost exact resemblance to the condition of things met with in the atrio-ventricular valves. In both cases we have identical arrangements for preventing eversion of the valve-flaps, viz., chordæ tendineæ, and muscoli papillares. But in the case of the mitral and tricuspid valves we have ample ancestral precedent to fall back upon as an explanation; such is not the case in the valves here described. It seems, then, that such a complicated and highly specialized arrangement can arise without any ancestral precedent; why, then, quote it as an explanation of the specialization in the atrio-ventricular valves, as would surely be done by anybody who was asked to explain the origin of the mechanism?

Similar results can only be produced by similar causes; we have, therefore, to look for such conditions as are common in the ontogeny of both valves as a cause which could have produced them.

It is not yet possible to say what these causes are, and the question must be left in this position. . . .

The citation of such cases at once arouses the interesting thought that a profoundly suggestive field of scientific investigation may be opening before us. We have, by the almost dogmatic insistence of the Darwinian theory, grown to consider organic structure as rigidly bound up with heredity and "ancestral precedent." Is it not possible, nay, does not any one of the foregoing cases prove that this so-called scientific truth must be modified? May not the same causes that produced a structure in the first instance and in the undifferentiated or embryonic tissue, under some circumstances again bring forth *de novo* a substitute organ in the older and more differentiated tissue?

If so, what are the laws and conditions of the new growth? When may we look for it to arise and how may we possibly stimulate or modify its production? The possibility of such neoplastic formations, benign, indeed, and in a very new sense of the word, may become less repugnant to our thought if we remember the regrowth of lost parts in many of

the lower orders of animals; the substitutive or vicarious function of organs with consequent change of structure, in man, in case of lesion of the specific organs; the growth of morbid neoplasms; but especially the remarkable effects of the "natural" healing-powers in cases of peculiar or extensive injury of one or more parts. The formation of a new epiglottis is only another step or variation of the seemingly intelligent or ingenious power at work in the other processes. Many would at once say that the creation of an organ in the fetus differs from substitutive or reparative creation in the adult only in the added difficulty of differentiation of tissue in the adult.

Following the law of analogy, we would naturally suppose that the secondary or substitutive creation will be more likely to arise, more easily provoked, or aided, in proportion to the patient's youth. The older the subject the less plastic the organ-forming tissues, and in a general way the less differentiated are they. The serous, mucous, and vascular tissues, the moist structures generally, may reasonably be expected to yield more examples of this formative power than those in which the nutrition and interchange of molecular matter are hindered by their dryness, etc. Nervous structures are especially plastic, the recreation of destroyed nerve-fibrils being a well-known fact. The position of an organ or tissue may also prove a factor. The nearer to the source of nutrition, or to the centers of vital activity or nervous control, the more readily perhaps will the tissue yield to the action and influence of the reparative or recreative forces.

EDITORIAL COMMENTS.

Newspaper Medicine.—The daily press is creating quite a sensation upon the announcement of the treatment of diphtheria by means of toxins isolated from cultures of the diphtheria-bacillus. If our newspaper friends had followed the investigations that have been going on in this department of science for the last four or five years, or had taken the pains to have consulted any intelligent medical man who kept himself informed on the progress of his art, there would have been no occasion for the sensational reports that have been published, and that can do only harm, just as occurred in the instance of tuberculin. Now the essence of the recent ferment is that a number of Koch's pupils, including Behring, Kitasato, Wassermann, Brieger, and Ehrlich, have for a number of years been at work upon the subject of isolating from cultures of diphtheria-bacilli a substance that they hoped would be capable, both of conferring immunity to diphtheria and of curing the developed disease, and from reports in current medical literature it would

appear as if some measure of success had been attained in these directions. The line of work is no longer novel, and is comparable to that pursued by Pasteur these many years with hydrophobia; by Ferran, nearly ten years ago, and by Haffkine and others more recently with cholera; by Koch with tuberculosis; by E. Fraenkel with typhoid fever; by the Klemperers with pneumonia; by Tizzoni and Cattani with tetanus. The results, however, cannot yet be said to be final or conclusive, and it will be well to withhold a verdict until sufficient data have been collected on which an intelligent opinion can be based. The outlook for specific medication in the not very remote future is rather encouraging than otherwise, but there is no reason to believe that true scientific interests will be furthered by the periodic sensational discoveries of our friends, the newspapers.

The Duty on Alcohol.—It appears that somewhat unintentionally Congress in its recent tariff-legislation has removed the tax on alcohol for use in medicine and the arts. There is, however, good ground for fear that at the next session steps will be taken looking to the repeal of the clause by which this desirable change has been brought about. It is therefore incumbent upon those interested in the use of alcohol for the purposes exempted from taxation—and medical men are to no small degree concerned—to offer organized opposition to any modification of the law as it now stands.

REVIEWS.

TEXT-BOOK OF ABDOMINAL SURGERY. A Clinical Manual for Practitioners and Students. By SKENE KEITH, F.R.C.S. Ed., assisted by GEORGE E. KEITH, M.B., C.M. Pp. 508. Philadelphia: J. B. Lippincott Co., 1894.

THIS work is of exceptional interest, as it is drawn from the personal observation of the authors. It is also based to a large extent on the life-work of Dr. Thomas Keith, "a surgeon whose early results—about 15 per cent. mortality after ovariectomy—were considered at the time so remarkable that they were described as 'doubtful,' and whose later results have been called 'phenomenal.'" We must congratulate the authors on the position they have taken against the too indiscriminate use of the exploratory incision, although we feel, as our means of diagnosing abdominal complications are so limited, that we are justified in using every resource in our power for a correct solution of a difficult problem. That tapping or aspiration, which they advocate in cases of doubtful diagnosis, is not always harmless, even under the most rigid asepsis, is the opinion of our most advanced celiotomists, who do not believe that the advantage to be gained is always commensurate with the risk run. For the intraperitoneal treatment of the pedicle the authors advise "faith" in the use of the cautery, which in their opinion is safe, and which is attended by less liability to subsequent bleeding. They also assert that the great majority of surgeons use the ligature "because it requires less care and delicacy of manipulation." The chapter on appendicitis is particularly instructive, the authors taking the present stand that all apparent cases of typhlitis and perityphlitis, or nearly all, are the result of inflammation

of the appendix; although they acknowledge that they are not prepared to say that a "simple typhlitis or perityphlitis can never exist without the appendix having been inflamed." They also advocate the repair of cervical lacerations as a cure for inflammation of the uterine appendages when this seems to have been the cause of that disease. They relate their failures as well as their successes, and, what is more, they give the therapeutics employed in each case. They believe that electricity employed according to Apostoli's method is useful in uterine fibroids, as avoiding mutilation, especially in the young, and that it may often do good in inflammations of the uterine adnexa. Altogether they have given us a well-written book, interesting not only to the general student, but to the specialist as well.

WHERE TO SEND PATIENTS ABROAD FOR WATER-CURES AND CLIMATIC TREATMENT. By THOMAS LINN, M.D. (The Physician's Leisure Library.) Detroit: G. S. Davis, 1894.

THIS little brochure of seventy-six pages gives much precise information regarding the principal health-resorts and mineral springs of Europe. The author has had many years of experience in this work, and has personally visited most of these resorts; his opinion on these points is, therefore, especially valuable. As he spends half the year in Aix-les-Bains and the remainder in Nice, his judgment of these two important health-resorts should be the best that exists.

The alphabetic index of maladies, with the names of resorts that are suitable in their treatment, will be found of great convenience. The avoidance of technical terms and the employment of simple language enable the physician to place the book in the hands of laymen about to undertake a journey abroad.

ESSENTIALS OF DISEASES OF THE EYE, NOSE, AND THROAT. Part I. Refraction and Diseases of the Eye. By EDWARD JACKSON, A.M., M.D., Professor of Diseases of the Eye in the Philadelphia Polyclinic, etc. Part II. Nose and Throat. By E. B. GLEASON, B.S., M.D., Surgeon in Charge of the Nose, Throat, and Ear Department of the Northern Dispensary of Philadelphia. Second edition, revised; 124 illustrations. Philadelphia: W. B. Saunders, 1894.

THE treatment of diseases of the eye, in connection with those of the nose and throat, is a suggestive departure in text-books. Part I of the second edition of this book is revised here and there textually, and now and then an addition has been made; but as it is confined to principles and settled facts, it has not been much enlarged. Its clearness of style and firm grasp of the subject commend it highly. Part II has been enlarged by the insertion of new matter. It is a good introduction to its subject, but perhaps advises operation too freely.

CHRONIC JOINT-DISEASE. (Some Preliminary Papers.) By JOHN RIDLON, M.A., M.D., Chicago, Ill.; and ROBERT JONES, F.R.S.C.E., Liverpool, Eng. Pp. 179. Index v. Chicago: C. J. Burroughs, 1894.

THIS volume is intended to supplement the existing text-books on orthopedic surgery. In many portions of the book an ultra-conservatism is displayed that is

scarcely in keeping with the spirit of modern surgery. On the other hand, it is stated that excisions "in children should never be performed," and that amputations "are always indicated as life-saving measures," statements which, if accepted, would prove that Fergusson and MacCormac have lived in vain. The work is not without merit, but is chiefly of value as illustrating the experience of two surgeons with the methods of a deceased practitioner of great mechanical ability.

INDEX-CATALOGUE OF THE LIBRARY OF THE SURGEON-GENERAL'S OFFICE, UNITED STATES ARMY. *Authors and Subjects*. Vol. XV.: UNIVERSIDAD-VZOROFF. Washington: Government Printing Office, 1894.

THE profession is to be congratulated upon the appearance of another volume of this most stupendous work, now nearing completion. Probably another volume will complete the catalogue proper, but a voluminous appendix will be required to include the literature that has appeared since the work was begun. Dr. Billings cannot be too highly commended for his devotion to his task, and the United States Government for its generous support.

SOCIETY PROCEEDINGS.

AMERICAN ACADEMY OF MEDICINE.

Nineteenth Annual Meeting, held at Jefferson, N. H., August 29 and 30, 1894.

THE President's Address was delivered by DR. GEO. M. GOULD, of Philadelphia, who spoke upon "Charity-organization and Medicine." He showed that the relation existing in common between the medical profession, the dependent classes, and the general community is much more intimate than is supposed. Of the dependents not one is devoid of medical relations, and of many the medical relation is the chief one. Every dependent is a patient of the community, and he is also a patient of the physician. At least as a citizen every physician has his interest in this class. The design of the paper was to get physicians to recognize the important and effective means and method of therapeutics offered by the charity-organization societies. As commonly practised charity is sin, it is selfish charity, almsgiving which doubly curses both giver and receiver. Its result is to increase, not prevent, the evil. Charity-organization aims to make benevolence scientific. Mendacity is mendacity. Mendicancy, in all its forms, is not the result, but the cause of poverty. The charity-organizer says: "1. Don't help frauds. 2. Help so as to make future help unnecessary. 3. Don't hire people to be miserable. 4. Prevent dependency." Attention was called to the fact that, first of all, it is necessary for the medical profession itself to clean house or to square itself with these principles. The hospital-abuse is a disgrace to the profession. In London, there were during 1893 in the 181 hospitals about four million out-patient visits. A similar abuse prevails in all large cities. Many of these patients were certainly able to pay something for medical services, and the younger members of the profession without hospital-positions were injured; the indiscriminate free

treatment increases the evil itself, and the energies of the profession are absorbed in the gratuitous curing of disease instead of preventing it. Selfishness lies at the bottom of the evil—not benevolence, and money given to hospitals without certain provision against indiscriminate free treatment is likely to become a curse to humanity instead of a blessing. The different classes of dependents, the pauper, the orphan, the beggar, the crippled, the blind, the criminal, the epileptic, the idiotic, the insane, etc., were briefly reviewed, and the principles of treatment as advised by the charity-organization societies was considered. The evils of idleness among asylum-inmates was especially criticised. The remarkable results of the treatment of epilepsy at the Bielefeld Epileptic Colony and the Magull Home were praised, and the good that may be hoped to result from individualization of these cases, from colonization, and home-treatment was set forth. The evils of institutionalism, the growing danger of large grants of money to private institutions, the everlasting work at curative medicine and the indifference to preventive medicine were also pointed out.

DR. BAYARD HOLMES, of Chicago, presented a paper entitled "The Sources of the Defective, Dependent, and Delinquent Classes." He stated that the young child is essentially dependent for a period varying inversely with the stage of civilization in which it lives, and after a period of independence, the individual in old age becomes again dependent; these conditions must be considered normal. Independence refers to that condition of mental and physical vigor which secures a useful and productive working-power in the individual.

When, from any cause, a man cannot support himself he becomes a defective; any considerable defect produces a condition of abnormal dependency. This proposition forms the foundation for the following classification:

1. Normal dependents: children, aged.
2. Abnormal dependents: (1) defective dependents—(a) congenital, (b) acquired; (2) voluntary dependents not defective; (3) involuntary dependents not defective.
3. Delinquents: (1) defective or essential criminals; (2) accidental or educative criminals.

Dependent children constitute one of the most hopeful of all dependent classes. The non-asylum method of care adopted in Australia was considered in this connection. With the other extreme also, the aged, great abuses have crept in among the institutions established for their care. The abnormal dependents made by far the greater claim upon the State for support. Some of the cases are brought about by heredity, but by far the greater number are acquired; thus institutional or city tenement-house life is causative of the child-defective. The defects that are the result of disease appeal to medical men. Less than 20 per cent. of the blind of the United States acquire their blindness in adult life; and the same may be said of the deaf-mute. One source of the defective class has not received the attention of physicians that it ought—those made so from railway injuries. One railway trainman out of 113 was killed and one other out of every 10 was injured in 1892. And the competitive system of our shops is producing equally fearful results.

The voluntary able-bodied defective reaches that state because he finds he is paid better to tramp than to work. As to the involuntary able-bodied dependents, it is of the greatest importance that physicians should examine into the causes that lead to their development.

Of the criminal class, 45 per cent. are essential criminals, or criminals from defect; the remainder are criminals accidentally.

Criminals have increased in the United States between 1850 and 1890 a little more than twice as rapidly as the population; and most of this increase is to be found among the crimes against property.

The paper closed with the exhortation for all to study the diseases of the State that produce the conditions considered.

DR. CHARLES MCINTIRE, of Easton, Pa., read a paper upon "The Importance of the Study of the Medico-social Relations of the 'Retrogressives' to the Medical Profession."

He grouped his statements around several propositions.

1. The necessity of affording asylum-restraint or treatment to so many of the classes under discussion also makes necessary the employment of physicians. Consequently, a fair proportion of medical men obtain their livelihood, either in whole or in part, through services rendered to retrogressives.

Statistics to show the precise number could not be obtained, but one physician out of every eighty-nine in the State of New York is giving his time to the care of the insane, and is receiving a salary therefor; and at least one physician out of every twenty-five in Pennsylvania is receiving some salaried compensation for professional care of retrogressives.

2. The physicians who are receiving a salary for services given to the retrogressives are few in comparison with the number who are, in an official position, freely giving their services to the same kind of people.

There are at least 69 hospitals in Pennsylvania, and 128 other charitable institutions; to most of these medical services are rendered without any money-return.

3. Closely associated with the last proposition is the complementary statement that a large number of people are willing thus to accept this gratuitous service from the physician.

About one out of every ten of the entire population of the State of New York was a beneficiary patient either in the hospitals or dispensaries of that State in the year ending September 30, 1892.

4. As service is the highest qualification of the physician, and service is only rightly so called when it is helpful, the true solution of the problems involving the facts stated must include the helping of the person served. All plans should be judged by the results obtained from this standpoint. It was stated that the important questions growing out of these propositions were not receiving organized scientific investigation by the profession, and a hope was expressed that such a study should be made.

DR. HENRY LEFFMANN, of Philadelphia, contributed a paper on the "Relations of Food-adulterations to the Dependent Classes." He pointed out that very little trustworthy literature on this topic is obtainable. It is obvious that extended statistical study in connection with analytical data will be needed to show in detail the results

of impure food, but it cannot be denied that anything that diminishes the digestibility of food or its nutritive value will be of disadvantage to those who are restricted in their means of living. In addition to the actual injury to health, it must be considered that adulteration (the term being used in its widest sense) diminishes the commercial value of food, without diminishing, materially, the cost.

Oleomargarin is an example of the damage brought about by a well-developed system of adulteration. The substance is sold to the consumers as butter and at the price of butter. The poorer classes do not get the benefit of its cheapness, but pay the price of a better article, so that independently of actual unwholesomeness, the cost of living, in proportion to the actual nourishment obtained, is increased. The presence of small amounts of metallic poisons in canned goods is also a serious matter. Dependents, defectives, and delinquents are doubtless largely instances of imperfect development, and to prevent such conditions the highest nutrition and purest food should be available.

An article upon "The Provident Dispensary in England," by DR. H. WEBSTER JONES, of London, Eng., was then read by the Secretary. He related that dispensaries were instituted in England as a response by the College of Physicians to the taunt of the Company of Apothecaries, that its members were "too proud to visit and too avaricious to bestow gratuitously" their services among the sick poor. The retort of the physicians to this was that "visits and advice profited little when medicines dispensed by the apothecaries were so inert and so exorbitant in price as to make their procurement useless even if possible." The Apothecaries' Company, organized by a separation from the grocers, not only grew in numbers, but shrewdly pushed its way into business and importance, employing many methods not to be admired to bring this about.

In 1687 the College of Physicians, in view of the admitted suffering of the poor, decided that its members should give advice "gratis," when asked, to the indigent within London and seven miles around. The apothecaries refused to coöperate, and, as a result, the first dispensary was established in 1699, in Warwick Lane, near Newgate, upon the principle of "voluntary contributions from the charitably disposed members toward a joint stock for the purpose of preparing and delivering medicines to the poor at rates near the intrinsic value."

This and the other early dispensaries were designed, according to their claim, for "the meaner sort of tradesmen, their apprentices, the servants, and the poor." To claim relief under the latter division required a certificate from a clergyman, churchwarden, or overseer of the poor of the district in which the patient lived.

In 1734 Seymour writes that the "dispensaries had been for a long time given up." It was shown that the leases expired in 1725, and were not renewed. This is the same year that Guy's Hospital was founded for the gratuitous treatment of the poor. St. George's followed in 1733, the London in 1740, and the Middlesex in 1745. These hospitals afforded advantages to those holding appointments, and caused them to use their influence for the out-patient department of these hospitals as opposed to the Provident Dispensary, especially if located near their hospital.

The first dispensary contained the germ of the Provident Dispensary: 1. Self-help. 2. Discrimination between proper and improper recipients of relief. 3. Contributory subscriptions. To these has been added some form of mutual assurance.

The next efforts were put forth in the Midland counties in 1823. The plan contemplated: 1. A list of honorary members as subscribers. 2. Free and independent members who paid for their advice. 3. Charity members, properly selected. 4. The extremely poor, depending on the parish. These institutions have continued in the "provinces" up to the present time with very little variation from the original type.

In London the tendency is toward free relief. The essayist quoted an opinion that habits of dependency were fastened upon hundreds of thousands by this indiscriminate free relief, and the London hospitals are thus converted into schools of pauperism. Twenty years' discussion of this evil has developed nothing better than the Provident Dispensary system.

A plan of such a system approved by a meeting of English gentlemen was outlined, a cardinal feature of which was, that it was to be self-supporting, and no public appeal was to be made to the contributors.

To show the extent to which free medical relief is carried in London a quotation was made from the "*Lancet* special supplement for the Metropolitan Hospital Sunday Fund," published June 2, 1894, wherein it was shown that, during the previous year 103,585 in-patients had been treated, and 3,871,290 out-patient visits had been made.

DR. J. A. SPALDING, of Portland, Maine, read a paper entitled "Is Blindness Increasing in the United States, and if so, What are the Best Means of Prevention?" He stated that no trustworthy census of the blind has ever been obtained in America. The intermingling of persons blind in one eye (as if that defect had anything to do with total blindness) with those who are blind in both eyes, and consequently the only ones who are blind, has produced endless confusion, as has been proved in the State of Maine, where personal acquaintance with one-eyed blind enrolled amongst the blind has led to curious blunders.

An effort was made by Dr. Spalding long before the last census was taken, to insist upon the census-enumerators obtaining the names of all the blind people in each district, in order that a house-to-house visitation later, by competent physicians, might obtain more perfect results. So far as ascertained, this was not done, or if done, no good has come from it.

The only way in which a correct tabulation of the blind might have been obtained having been so far neglected, we have no right to claim that blindness is on the increase, for the plain reason that we have no standard to start from. Nevertheless, the number of blind being considerable in every State, we should bend our energies to the question of prevention. Accidents might be prevented in the dangerous employments, such as stone-quarries, foundries, or machine-shops, by the use of shields of protecting glasses, but in many such establishments the overseers object to the men using such means, on the ground that they cannot see sufficiently well through them to do good work. Possibly legislation might here be useful.

A prolific cause of blindness lies in infantile ophthalmia. Legislation in that respect serves the very useful purpose of compelling many people to bring their infants so affected under early treatment, but it fails lamentably in teaching physicians how to treat them skilfully. It also fails in not compelling every midwife and every physician and nurse to use aseptic injections before the delivery of the child, and aseptic cleansing of the eyes directly after the child is born.

One of the most serious obstacles to the prevention of blindness lies in the lack of education sufficient to diagnose or to treat diseases of the eye by even many excellent practitioners, and a still more disheartening danger lies in the enormous abundance of partly skilled ophthalmic surgeons, who, fresh from an all too-brief post-graduate course, establish themselves as specialists in diseases of the eye in the small country towns, hoping to gain an easier living than by following the slower path of general practice. That this is no exaggeration is illustrated by the fact that Dr. Spalding had within four weeks seen two totally blind infants of about six weeks of age, and a third with extensive ulcerations of the cornea, produced by the unskilled knowledge of three such physicians in three separate localities. Even general practitioners could have done no worse.

Although the necessity of post-graduate schools is not denied, yet they ought not to grant diplomas after such brief instruction. If ophthalmology is the exact science that it is claimed to be by its practitioners, it cannot be learned in a few weeks, and everyone knows that the ophthalmoscope is not to be handled with skill in that brief time. There are too many ophthalmic surgeons who have never dissected an eye.

Dr. Spalding thought that the American Ophthalmological Society ought to raise a voice of protest against the granting of diplomas to practise as ophthalmic surgeons inside of at least three months, whilst six months would be better still.

The argument of the paper was that blindness could be better prevented by the education of well-skilled experts in diseases of the eye than by legislative means.

DR. BENJAMIN LEE, of Philadelphia, contributed a paper on "The Prevention of Blindness." In considering the question of the defective classes and the means for diminishing their numbers, it is appropriate to treat not of the absolutely blind alone but also of all who suffer from such degrees of defective or perverted vision as in any way render them less productive to society.

The State will not do its full duty in this regard until, through its sanitary authorities, it supervises the life of the individual from the cradle to the grave, and banishes every enemy of life except old age.

In the State of Pennsylvania the census of 1880 showed that blindness had increased during the previous decade more than five times more rapidly than the population. This is partly to be accounted for by the fact that the increase in population was largely due to immigration, and that the immigrants, belonging to the Slavonic and Italian races, rarely employed physicians in parturition. Hence ophthalmia neonatorum went unnoticed and unchecked. This is known to be a preventable disease. The duty of the State to prevent it by the enactment of suitable laws, and by the provision of medical relief for the destitute, and by checking its

spread in public institutions, is very clear. It is probable that one-third of the blindness now existing could thus be entirely prevented. This, however, is but half the duty of the State. Eyes originally sound are ruined in school by methods and conditions that are entirely avoidable. Among these may be noted the holding of the book too close to the eye, the use of fine print in school-books, the too-prolonged use of the eye, insufficient and badly managed lighting, use of the eyes too soon after convalescence from the exanthemata, the use of polished blackboards, irritation of the conjunctiva from chalk-dust, and many others. The State should make the office of school-director one of more responsibility and hedge it about with greater restrictions. The position should no longer be the prize of the ward-politician. The State should instruct both school-director and teachers as to their duties in regard to the health of the pupils. It would be well to have a woman on every school-board. Hours of eye-study should be diminished, and more teaching should be done by illustrated lectures. Finally, more care should be taken to stamp out the infectious diseases which so often leave impairment of vision as their sequel.

The State has a very definite and positive duty, not only for the prevention of the increase of this large class of defectives, but for the absolute abolition of one of its divisions and the notable diminution of all.

DR. LUCIEN HOWE, of Buffalo, N. Y., next read an article on "The Present Condition of Legislation for the Prevention of Blindness." He contended that with ophthalmia neonatorum, the cause of one-fifth of the blindness found in our asylums, the need of precautionary measures is only too apparent. Moreover, the loss of eyesight from this disease is preventable in the very large majority of cases if treatment is begun early enough. A delay of even a few hours may condemn the helpless child to a life of blindness. Hence the effort instituted by the New York State Medical Society in 1891, and continued by the American Medical Association in 1893, to secure legislation throughout the United States which should direct that infants presenting symptoms of ophthalmia neonatorum be placed at once under the care of a competent physician, with penalties for failure to do so. New York passed such a law in 1891, and since then similar legislation has been secured in Maine, Rhode Island, Minnesota, Ohio, and Maryland within the past year also. In Louisiana such a measure passed one house of the legislature, and in Illinois, Indiana, New Jersey, and North Carolina committees have been appointed by the State Medical Societies to take up the work. At recent meetings of the State Societies of Pennsylvania and Iowa strong resolutions were adopted in favor of legislative action, and in Alabama, Arkansas, California, Colorado, Connecticut, Georgia, Kansas, Kentucky, Michigan, Missouri, Nebraska, South Carolina, Tennessee, Vermont, Washington, and West Virginia, leading ophthalmologists have expressed their readiness to coöperate in the effort to secure such a measure in their respective States. The prospects, therefore, may be considered good for a quite general enactment of such legislation, and, it may be hoped, in consequence, with a material check upon the ravages of ophthalmia neonatorum.

DR. HELEN C. PUTNAM, of Providence, R. I., read a

paper on "Physical Training as a Reformatory Agent." She classified the causes of crime as cosmic, biologic, and social. Criminals are classified as: (1) Criminals by passion, a solitary crime occurring in a life of integrity; (2) recidivists, subdivided into criminals having a tendency to insanity, alcoholism, epilepsy; criminals by environment, either occasional or habitual; criminals in any environment. It is within the limits of the uncompleted attempt of anthropology to discover a criminal type to say that the criminal is of a low organic structure, and of a low level of intellect, suggesting the precocious astuteness of some children, savages, idiots, animals. His mental and moral anomalies exist in a rudimentary state in normal children and adults. Modern criminology theoretically and statistics practically demonstrate the futility of punishment in curing or preventing this social disease. The problem of crime is one of development and education. The ideal of institutions for criminals should be to return to society citizens trained to become useful members. Pioneer reformatories are introducing methods to educate mentally, develop morally, and equip with marketable skill to earn an honest livelihood. Dr. Wey, of the New York State Reformatory, has proved the need of physical treatment in up-building citizens from vitiated material. He assigns to the gymnasium dullards, certain of the semi-invalids, malingerers, the very nervous, boys in a sluggish or debilitated condition. Some subjects of experiment had had school, industrial and military training in the reformatory for one or two years, with no "appreciable progress." With these classes of criminals results are more satisfactory than those obtained from any other method. The aimless, shuffling gait, and the ox-like bearing give way to erect carriage, bright eyes, keener mental action, and greater alertness in the work-shop; the moral tone improves, and anti-social instincts and physical insensibilities disappear, both being characteristic of the criminal, and the latter being the basis of his "psychical analgesia"—the most fundamental peculiarity; 77 per cent. are recruited from the indifferent pupils of our public schools. The "tiny eye and tongue and pen-wagging muscle" are not the only avenues of approach to centers of cerebral activity, as Dr. Wey's work shows, under the greater difficulties of age and criminal tendencies. Physical training in reformatories and colleges is beginning at the wrong end. Gymnasias for adults are customarily under the direction of physicians. That the more impressionable frame and condition of children may benefit, it is no less necessary that there be school-physicians to guide these early formative and reformatory attempts to successful issue. In Paris one hundred and fifty physicians are appointed to the public schools.

DR. GEORGE G. HOPKINS, of Brooklyn, N. Y., then read a paper upon "The Evolution of Surgery." He noted that the first dawn of the science of surgery is discovered among the Aryans; the earliest records being among the writings of the Hindu Brahmins, from 2000 to 3000 years before Christ. It may be inferred, from the fact that these books prohibit human dissections, that dissection of the human body was practised earlier. The Vaidya, or medical students, were instructed by a Garu as to the best means for "aiding the wounded and deformed." The period of study was seven years. Not more than twenty were permitted to attach themselves

to one instructor at one time; the teaching was oral and clinical. They were instructed in operations on the bladder, the eye, the ear, and the nose, and the treatment of deformities, and, we may infer, in other operations as well.

The Buddhist monarch Asoka, in 500 B.C., caused an edict to be inscribed on the native rock at Gazerat directing that hospitals be established on all the highways of his kingdom. These were to be supplied not only with a resident physician, but were to have a resident surgeon as well. The Buddhists did not invent anything, but readily absorbed the learning of the Brahmins. Nearchus states that Alexander, in his invasion of India, found the Hindoo physicians far more skilful than the Greek, and it is probable that all the medical knowledge of the Arabians was derived from India, and many think that Greece learned from Arabia.

Hippocrates, denominated the "father of medicine," must have derived much of his knowledge from earlier writers. His "bath" embodies the sentiments subscribed to by the Hindoo student two thousand years before his day. He gives many surgical truisms in his third book, besides writing several distinctly surgical books. In the reduction of many dislocations we have not to this day improved upon the methods of Hippocrates.

Seventy-five years later Aristotle contributed to the literature of anatomy, in many instances with the study of surgery in view. Herophilus, of Alexandria, was an anatomist of great ability. He practised dissections on the human body; upon the living as well as the dead, criminals being given him for the former purpose. The names of many anatomic parts in our present nomenclature were of his selection. The burning of the Alexandrian Library was a great blow to the progress of surgery.

Medical and surgical learning next centered in Rome. Aulus Cornelius Celsus flourished there in the first century of the present era. He combined the teachings of Hippocrates and those of the Alexandrian school. Mages, a surgeon of Rome at the time of Celsus, invented a double cutting gorget for incising the neck of the bladder in the operation for stone.

Galen, 130 A.D., seems rather to have been a compiler and selector of other men's ideas than an originator, and in this he was more useful to the human race than many an originator. His works furnished the material for the text-books for 1200 years. He advised the ligation of arteries in severe hemorrhages. The new Alexandrian Library, which arose on the ashes of the old, in 640 A.D. gave to the Saracens, who captured the city, many works on medicine which were translated into the Arabic, taking the light back to the East, while the Occident lay in darkness for 900 years. Rhazes was the greatest of the Saracen surgeons. A knowledge of surgery found its way into Europe through the Moorish occupation of Spain.

Ambroise Paré, the father of modern surgery, was born in 1517. He rediscovered the use of the ligature, and so made surgical science possible. It required 200 years for the profession generally to accept his teachings.

The discovery of anesthesia opened the way for the development of modern surgery. McDowell's ovariectomy; Sir J. Y. Simpson's discovery of acupressure;

J. Marion Sims' operation for vesico-vaginal fistula; Amusat's device of torsion of the arteries; Pasteur's careful studies, opposing autogenesis, are all footprints of the march of surgery during the present century, and lead up to a period which was to bring forth a man destined to revolutionize the whole practice of surgery. Joseph Lister will ever be hailed as one of the greatest surgical geniuses the world has ever seen.

A vast field of remedial surgery has been opened up which, previous to the time of anesthetics and antiseptics, was a *terra incognita*.

It seems hardly possible that the author could have penned the following words in his maiden medical paper in 1871: "We may hope that the day is not far distant when union by first intention will not be an uncommon occurrence."

DR. CHARLES MCINTIRE then read the "Report of the Committee on the Comparative Value of Academic Degrees." This report dealt first with that portion of the last report of President Eliot, of Harvard University, relating to the position of the A.B. degree, in which he shows that the other degrees are gradually being given to a proportionately greater number, and "are rapidly winning their way to public consideration and the respect of educated men." This, with the increased efficiency of the secondary schools and the greater demands of the professional schools, was jeopardizing the traditional four-years' course, leading to the A.B. degree. In reviewing these statements, it was suggested that the Academy should be on the *qui vive* to learn every change in the educational processes and adapt itself always to the present condition.

A considerable part of the report was occupied with an account of the efforts of the Board of Regents of the University of the State of New York, looking to the elevation of the standard for entrance into the professional schools. Their present aim is to make a high-school education the minimum qualification. A plan of this kind, by which in gradually increasing conditions the students who would graduate in 1900 will have a high-school education, has been adopted by the dental schools, and the Regents are endeavoring to have the medical schools adopt the same plan. The report expressed the opinion that this was the least that the medical schools could do.

The action of the Association of American Medical Colleges in raising both the standard for entrance and increasing the length of the course leading to the degree of M.D., was noticed and commended. The report closed by calling attention to the greater educational power of the courses in our medical schools than they possessed a few years ago. This should result in more thoroughly educating the physician.

DR. J. M. MYER, of Danville, Ky., read a paper on "The Qualifications of the Physician." He maintained that the physician should have a foundation of good common sense and a thorough elementary education, followed by a classical training; the A.B. should be a prerequisite to entrance upon the study of medicine. Of the moral tone of the man there should be no question.

DR. ROBERT LOWRY SIBBET, of Carlisle, Pa., read a paper on "The Work of Our Academy."

The following resolutions were unanimously indorsed by the Academy:

Whereas, The abuse of medical charities, to which the attention of the American Academy of Medicine has been so forcibly drawn by the President in his opening address, is an evil to which the medical profession should not close its eyes; therefore,

Resolved, That the participation of physicians in the movement toward charity-organization is earnestly urged as the most efficient means of limiting the indiscriminate and injurious gratuitous bestowment of medical services.

Whereas, Inflammation of the eyes in the newly born produces defective vision or blindness, which seriously impairs the productiveness of the individual; and

Whereas, Medical experience shows that nearly all of these cases are preventable or curable, it becomes the duty of physicians everywhere to further legislation which promises to prevent this disastrous inflammation;

Resolved, Therefore, that the American Academy of Medicine unanimously favors legislation looking to the prevention of blindness amongst the newly born, and urges all physicians to exhaust every means to bring about such prevention in the hope of ultimately extinguishing the encroachments of blindness from this cause amongst future members of the State.

Whereas, Many defects of vision not amounting to blindness, but seriously impairing the usefulness of the individual have been proved to be caused by improper methods of study and defective arrangements in school-buildings; therefore,

Resolved, That physicians should use their best efforts to secure the appointment of intelligent and educated persons of both sexes on school-boards, and should make it their duty to instruct such boards in regard to the proper distribution of light in school-rooms; the adjustment of seats to desks; the apportionment of hours of study and other points conducive to the hygiene of the eyes.

Whereas, The consideration of dependents, defectives, and delinquents brings the conclusion that their numbers can be decreased by proper care of the individual in childhood and youth; therefore

Resolved, That the health of children under the conditions and requirements of public educational institutions should receive far greater consideration than it has received up to the present time; and as none but physicians are competent to diagnosticate the often obscure tendencies and abnormalities obtaining in these early years, the office of school-physician should be instituted in connection with every public school, and physicians should be upon all public school-boards, the duties of such officers being concerned with the sanitary conditions of buildings, the instruction in hygiene, personal, household, and public, and the individual physical condition of the pupils.

Whereas, The true benefit from a prolonged course of medical instruction, in which laboratory-practice has so prominent a part, can only be obtained by a mind trained to study.

Resolved, That the American Academy of Medicine congratulates the Board of Regents of the University of New York upon their efforts to secure at least a high-school education for every candidate for a medical course, and expresses the wish that they will persevere in their efforts until they are crowned with success.

Resolved, That the Academy commends the action of

the dental schools of that State, and urges the medical schools to adopt the same very moderate minimum entrance qualification by the gradual increase as suggested.

The officers elected for the ensuing year are:

President—J. McF. Gaston, of Atlanta, Ga.

Vice-Presidents—Rufus P. Lincoln, of New York City; William T. Smith, of Hanover, N. H.; Helen C. Putnam, of Providence, R. I.; Victor C. Vaughan, of Ann Arbor, Mich.

Secretary and Treasurer—Charles McIntire, of Easton, Pa.

Assistant Secretary—Edgar Moore Green, of Easton, Pa.

Chairman of Committee of Arrangements—C. C. Bombaugh, of Baltimore, Md.

The next meeting of the Academy is to be held at Baltimore at the time of meeting of the American Medical Association.

NEWS ITEMS.

Meetings of State and National Medical Societies:

	Meets.	Next meeting.
American Association of Genito-urinary Surgeons.	May 28-31, 1895	Washington, D. C.
American Association of Obstetricians & Gynecologists.	Sept. 19-21	Toronto, Ont.
American Electro-therapeutic Association.	Sept. 25-27	New York City.
American Public Health Association.	Sept. 25-28	Montreal, Canada.
Association of Military Surgeons of the United States.	May, 1895	Buffalo, N. Y.
British Medical Association.	July 30-Aug. 2, 1895	London, England.
Canadian Medical Association.	September	St. John, N. B.
Idaho State Medical Society.	Sept. 10-12	Boise, Idaho.
Illinois State Medical Society.	May 21, 1895	Springfield, Ill.
International Medical Congress.	August, 1896	Moscow, Russia.
Medical Association of the State of Alabama.	April 16-19, 1895	Mobile, Ala.
Medical Society of the State of California.	April 16, 1895	San Francisco, Cal.
Medical Association of Georgia.	April 17, 1895	Savannah, Ga.
Medical Society of the State of New Jersey.	June 25, 26, 1895	Cape May, N. J.
Medical Society of the State of New York	Feb. 5, 1895	Albany, N. Y.
Medical Society of the State of Pennsylvania.	May 21, 1895	Chambersburg, Pa.
Medical Society of the State of Tennessee.	April 9, 1895	Nashville, Tenn.
Medical Society of Virginia.	October.	Richmond, Va.
Medico-Legal Society.	Dec. 12	New York.
Mississippi Valley Medical Association.	Nov. 20-23	Hot Springs, Ark.
New Hampshire Medical Society.	May 30, 31, 1895	Concord, N. H.
New Mexico Medical Society.	September.	Albuquerque, N. M.
New York State Medical Association.	October 9-11	New York City
Ohio State Medical Society.	May 15, 1895	Columbus, O.
Southern Surgical and Gynecological Association.	Sept. 13-15, 1894	Charleston, S. C.
Texas State Medical Society.	April 23, 1895	Dallas, Tex.
Tri-State Medical Society.	October 9-11	Atlanta, Ga.
Tri-State Medical Society.	October 2, 3	Jacksonville, Ill.
Vermont State Medical Society.	October 11, 12	Montpelier, Vt.

Meetings of Philadelphia Medical Societies:

	Meets.	Next meeting.
Academy of Surgery,	1st Monday of month, Oct.—June.	Oct. 1
College of Physicians,	1st Wednesday of month, Sept.—June.	Oct. 3
Section of Ophthalmology,	3d Tuesday of month, Sept.—May.	Sept. 18
Section of Orthopedic Surgery,	3d Friday of month, Oct.—April.	Oct. 19
Section of Otology,	1st Tuesday of month, Oct.—May.	Oct. 2
Section of Surgery,	2d Friday of month, Oct.—May.	Oct. 12
County Medical Society,	2d and 4th Wednesdays of month, Sept.—June.	Sept. 12
Neurological Society,	4th Monday of month, Oct.—April.	Oct. 23
Obstetrical Society,	1st Thursday of month, Sept.—June.	Oct. 4
Pathological Society,	2d and 4th Thursdays of month, Sept.—June.	Sept. 13

The American Public Health Association will hold its twenty-second annual meeting at Montreal, Canada, September 25, 26, 27, 28.

The following topics have been selected for consideration:

"The Pollution of Water-Supplies." "The Disposal of Garbage and Refuse." "Animal Diseases and Animal Food." "The Nomenclature of Diseases and Forms of Statistics." "Protective Inoculations in Infectious Diseases." "National Health-Legislation." "The Cause and Prevention of Diphtheria." "Causes and Prevention of Infant-Mortality." "The Restriction and Prevention of Tuberculosis." "Car-Sanitation." "The Prevention of the Spread of Yellow Fever."

Papers are invited upon the following additional subjects:

"On the Education of the Young in the Principles of Hygiene." "Private Destruction of Household Garbage and Refuse." "Disinfection of Dwellings after Infectious Diseases." "Inspection of School Children with Reference to the Eyesight."

The Cholera in Europe.—It is reported that for the three days preceding September 3d there were 623 fresh cases of cholera and 313 deaths in Galicia, and in Bukovina 46 fresh cases and 25 deaths. One fresh case of cholera and 1 death were reported at Amsterdam on September 3d. In Maestricht there were 3 fresh cases and 1 death, and in Dordrecht 3 fresh cases and 2 deaths. The State Department has been notified by the Consul-General at Frankfort-on-the-Main that cholera has broken out at Burgela, near Marburg, Germany.

The Tri-State Medical Society (Illinois, Iowa, and Missouri) will meet in Jacksonville, Ill., October 2 and 3, 1894. Valuable papers are promised from leading members of the profession of Chicago, St. Louis, Kansas City, Indianapolis, Keokuk, Springfield, and other places. A large and profitable meeting is promised.

The West Virginia Journal of Medicine and Surgery is the name of a new monthly published at Huntingdon, W. Va., under the editorial control of Drs. C. C. Hogg, J. D. Myers, and J. Boyce Taylor.

Dr. William Cecil Dabney, Professor of Medicine in the University of Virginia, died August 20, 1894, at the age of forty-five years.

BOOKS AND PAMPHLETS RECEIVED.

The Johns Hopkins Hospital Reports. Report on Typhoid Fever. Baltimore: The Johns Hopkins Press, 1894.

I. De l'Empyème du Sinus Sphénoïdal. II. Un Cas d'Angiokératome de la Corde Vocale Droite. Dr. E. J. Moure. Paris-Bordeaux: O. Doin et Fils, 1894.

Some Considerations Bearing upon Practice with Dynamic Antagonists in Cases of Drug-poisoning. By Charles S. Mack, M.D. Reprinted from the North American Journal of Homeopathy, 1894.

The Tariff and Administrative Customs Acts of 1890, and the Bill H. R. 4864, as Reported to the Senate from the Finance Committee, March 20, 1894. Washington: Government Printing Office, 1894.

Remarks upon Appendicitis, Based upon a Personal Experience of 181 Cases. By Maurice H. Richardson, M.D. Reprinted from the American Journal of the Medical Sciences, 1894.

Contribution to the Study of Cerebral Surgery, Based on an Operation for the Removal of a Tumor. By M. H. Richardson, M.D., and G. L. Walton, M.D. Reprinted from the American Journal of the Medical Sciences, 1893.

Two Cases of Brain-Tumor. By Clarence Bartlett, M.D., and W. B. Van Lennep, A.M., M.D. Reprinted from the Hahnemannian Monthly, 1894.

Report of the Jefferson Medical College and Hospital for the Year Ending September 30, 1893.

Transactions of the American Dermatological Association at its Seventeenth Annual Meeting, held at the Hotel Plister, Milwaukee, September, 1893. New York, 1894.

The Annual Report of the Health of the Imperial Navy for the Year of Meiji (1892). Tokyo: Navy Department, Central Sanitary Bureau, 1893.

A Manual of Practical Obstetrics. By Edward P. Davis, A.M., M.D. Second edition, revised and enlarged. Philadelphia: P. Blakiston, Son & Co., 1894.

Sandow on Physical Training. Edited by G. Mercer Adam. New York: J. Selwyn Tait & Sons, 1894.

A Text-book of the Diseases of Women. By Henry J. Garrigue, A.M., M.D. Philadelphia: W. B. Saunders, 1894.

Gonorrhea. Being the Translation of Blennorrhoea of the Sexual Organs and its Complications. By Dr. Ernest Finger. Third revised and enlarged edition. New York: William Wood & Co., 1894.

Aural Cholesteatomata. By E. B. Gleason, M.D. Reprinted from the Medical Bulletin.

Pernicious Malarial Fever. By George Dock, M.D. Reprinted from the American Journal of the Medical Sciences, 1894.

The Second Annual Report of the Sheppard Asylum, a Hospital for Mental Diseases. Baltimore, Md., 1894.

The Reciprocal Relations of Mitral Stenosis and Pregnancy. By Herman B. Allyn, M.D. Reprinted from the University Medical Magazine, 1894.

Further Studies of the Cycloplegic Value of Homatropin Plus Cocain Discs, as Atropin, Duboisin, and Hyoscin Substitutes. By Casey A. Wood, C.M., M.D. Pamphlet. Read before the Ophthalmic Section of the Pan-American Medical Congress, 1893.

Spastic Senile Entropion Cured by Canthotomy. By Boerne Bettman, M.D. Reprinted from the North American Practitioner.

The Treatment of Blennorrhoea Neonatorum. By Boerne Bettman, M.D. Reprinted from the Journal of the American Medical Association, 1893.

The Spectacle Treatment of Hypermetropia. By Boerne Bettman, M.D. Reprinted from the North American Practitioner.

A Contribution to the Pathology of Acne Varioliformis Hebrae. By J. A. Fordyce, M.D. Reprinted from the Journal of Cutaneous and Genito-Urinary Diseases, 1894.